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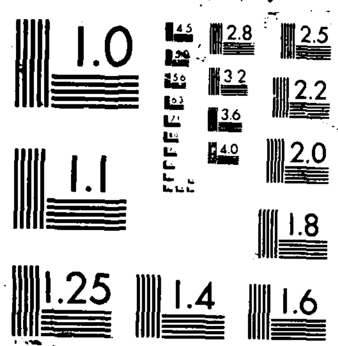
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U.S. AIR FORCE
INSTALLATION RESTORATION PROGRAM
PHASE I - RECORDS SEARCH
FOR
SUFFOLK COUNTY AIR FORCE BASE (RETIRED)
SUFFOLK COUNTY AIRPORT
WESTHAMPTON BEACH, NEW YORK

September 1987

prepared by

DAMES & MOORE

submitted by

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
OAK RIDGE NATIONAL LABORATORY
operated by
MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under Contract No. DE-AC05-840R21400

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This report presents the results of the Installation Restoration Program (IRP) Phase I records search for Suffolk County Air Force Base (Retired) in Westhampton Beach, New York. The study focuses on two disposal sites that are currently located on the now Suffolk County Airport. The base was deactivated in 1970 and turned over to the county for their use. Major emphasis was placed on investigation of past operations and disposal practices of the Air Force at the former Air Force Base during its period of operation from 1951 to 1970. In addition, a study was made on the Air National Guards past waste generation and disposal practices at the Suffolk County Airport during the period between 1971 and 1987. The Phase I study concludes that, based on report findings, no hazardous wastes were disposed of at either landfill site during occupation by the Air Force or the Air National Guard. However, the potential for hazardous waste to have been disposed of at the site exists; the parties responsible for the disposal are unknown.

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EXECUTIVE SUMMARY

INTRODUCTION

This report presents the results of the Installation Restoration Program (IRP) Phase I - Records Search for Suffolk County Airport (SCA)--formerly Suffolk County Air Force Base (SCAFB)--in Westhampton Beach, New York. The purpose of the Phase I study is to identify and assess sites posing potential threat to human health or to the environment due to contamination from past handling of hazardous materials.

Historically, SCAFB was activated in 1951 and operated by the U.S. Air Force (USAF) until official closing in 1969; deactivation continued through July 1970. With the closing of the base, most of the land was reacquired by Suffolk County and the airfield operated as SCA. In 1971 the Air National Guard (ANG) leased approximately 70 acres of building sites and aircraft working areas of the former SCAFB from SCA for its present mission of aerospace rescue and recovery. Many other former AFB buildings have also been leased by SCA to private commercial users.

This Phase I study focuses on two disposal sites that are currently located at SCA but were initially used by SCAFB. Due to the history of the sites with respect to the different periods of ownership/use, the Phase I study was conducted in two phases. During the initial effort, major emphasis was placed on investigation of past operations and disposal practices of the Air Force at the former SCAFB during its period of operation from 1951 to 1970. The Installation Assessment for the two disposal sites was initiated in August 1986 with a records search and review and site reconnaissance of the two sites of concern and of other pertinent areas of the former SCAFB. Based on information from historical records, aerial photographs, physical site inspection, and personnel interviews with former SCAFB personnel, the history of two sites was developed and the sites were evaluated for contamination characteristics, potential migration pathways, and potential pollutant receptors.

The results of the Installation Assessment were initially presented in a draft version of the main section of this report. The draft report was reviewed by Oak Ridge National Laboratory, USAF, and appropriate regulatory agencies.

Subsequent to this review, Dames & Moore was requested to complete further investigations to determine the potential role of the ANG in the use of the two disposal sites.

Due to ANG presence at SCA since 1971, its role as SCA tenants, its known use of one of the sites of concern, and its location with respect to the two sites, the USAF considered it appropriate to investigate ANG's past waste generation, handling, and disposal activities at SCA, especially with respect to their potential use of either of the two sites of concern. As a result, in June 1987, the second phase of the study was conducted and an addendum to the main report was prepared following an on-base records search and investigation of ANG activities. The addendum report, which follows the main section of this document, supplements the initial findings presented in the main section of this report and presents greater detail relative to ANG activities. The scope of the addendum report is limited to ANG's role in the use of the two disposal sites although investigation encompassed the entire facility to collect pertinent information relating to these sites.

FINDINGS

Site 1, Runway Disposal Area, was used by SCAFB from the mid-1950s until 1970. The SCA, the 106th Aerospace Rescue and Recovery Group (ARRG) of the ANG, and other SCA lessees were authorized contributors to the Runway Disposal Area from 1971 to 1982. Also, unauthorized disposal has occurred at this site since 1970. Approximately one-third of this site is covered by concrete rubble from reconstruction of the airfield runways by SCAFB. The remaining 5.8 acres consist of random surface scattering of waste piles. Based on information collected during the 1986 investigation, waste burial is suspected within a small area in the northwest corner of the site. Despite efforts during the June 1987 investigations to collect additional confirmatory information concerning waste burial in the northwest corner, no further information was obtained. The majority of wastes disposed of at Site 1 were inert wastes associated with construction. Unauthorized disposal of other wastes, including potentially hazardous wastes in this area, after 1970, has resulted in potential contamination at Site 1.

Site 2, Canine Kennel Landfill, a 1-acre site, was used by SCAFB during deactivation activities for burial of inert wastes. Evidence indicates that this site

was not later used by either SCA or ANG for waste disposal. However, PCB transformers and capacitors were discovered at this site and removed in 1984. Confirmation of PCB contamination in the near-surface soils has occurred at the site. The source of the PCB transformers found at the site is unknown.

It was concluded during the initial investigation that surface runoff is not a direct source of concern as a potential contaminant pathway at either of the two disposal sites because of hydrologic conditions in the vicinity of the sites. High permeability sandy soils allow for rapid percolation through the unsaturated zone and potential contamination of the surficial aquifer. The groundwater table is approximately 15 to 20 feet below each of the sites. Hydraulic conductivity of the surficial aquifer is very high and there is potential for contaminant migration to be correspondingly rapid. Groundwater flow direction is southeastward toward both the headwater area of Quantuck Creek and the Old Ice Pond of the Quogue Wildlife Refuge which is located 1,000 feet downgradient of the sites. Approximately 1,500 feet southwest, but not directly downgradient, of Site 1 are potable water supply wells for the Suffolk County Water Authority, which could potentially be affected by contaminants migrating from the site. The surficial aquifer supplies virtually 100 percent of all the potable water in the area, either through municipal or private wells.

The Hazard Assessment Rating Methodology (HARM) was applied to the two sites of concern, and scores of 52 and 57 were calculated for Site 1 and Site 2, respectively. It is important to note that the rankings reflect the current condition of the sites and not the condition of the sites when the Air Force closed the base in 1970. Significant factors affecting the rankings included nearby critical environments and nearby use of the uppermost groundwater aquifer. Potential contaminants at Site 1 primarily include POLs, paint wastes, and solvents and at Site 2 include PCBs and heavy metals. The HARM rankings prepared during the initial study (and incorporated in the main section of this report) were reviewed subsequent to the June 1987 investigation. Addendum report findings did not impact the HARM scores previously determined.

CONCLUSIONS

The Phase I study concludes that, based on report findings, no hazardous wastes were disposed of at Site 1 or Site 2 during use of these sites by SCAFB.

Additionally, no records search or interview information collected indicates that either Site 1 or Site 2 was used by SCANG for disposal of hazardous wastes. However, during site visits, four apparently unopened 5-gallon cans of metal coating resins were observed at Site 1. The cans had military markings and carried a 1973 date. How they got to the site is unknown and they have subsequently been removed.

The potential for hazardous wastes to have been disposed of at Site 1 since July 1970 exists; the parties responsible for this disposal are unknown. PCB contamination at Site 2 has been confirmed. The parties responsible for disposal of the PCB transformers and capacitors are unknown.

RECOMMENDATIONS

Based on occurrences at Sites 1 and 2 after transfer of site property to Suffolk County, additional contamination investigations at both sites appear warranted to assess the potential threat to human health or to the environment. A study involving groundwater sampling and analysis is recommended at each site to confirm or disprove the existence of contamination and to quantify the extent of any problems that may exist. The necessity for conducting remedial measures or cleanup operations would then ultimately be determined by evaluation of the results of confirmation investigations.

I. INTRODUCTION

I.A BACKGROUND

The United States Air Force (USAF), due to its primary mission of defense of the United States, has long engaged in a wide variety of operations dealing with toxic and hazardous materials. This problem has been recognized by the Department of Defense (DOD), and action has been taken to identify the locations and contents of past DOD disposal sites and eliminate the hazards to public health in an environmentally responsible manner. In response to the Resource Conservation and Recovery Act (RCRA) and in anticipation of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), DOD issued Defense Environmental Quality Program Policy memoranda (DEQPPM), which mandated a comprehensive Installation Restoration Program (IRP). The current IRP policy is contained in DEQPPM 81-5, dated December 11, 1981, and implemented by Air Force message 211807Z Jan 82.

As part of the IRP program, two sites have been identified for investigation at the Suffolk County Airport formerly Suffolk County Air Force Base (SCAFB), Westhampton Beach, New York.

I.B AUTHORITY

The IRP is a basis for response actions on Air Force (AF) Installations under the provisions of CERCLA. Phase I of the IRP is managed by the major commands (MAJCOM) with technical guidance from the AF Engineering and Service Center. Based upon DOD directives, AF/DEV/LEEV develops program policy that is constantly reviewed to ensure that DOD/AF/EPA agreements and changes are incorporated into current policies for the IRP.

I.C PURPOSE

The purpose of the IRP is to search for, identify, and assess actual or potential contaminant migration from past DOD disposal sites and ensure that remedial actions to correct environmental hazards related to past disposal practices are implemented in a timely and cost-effective manner. The IRP has been developed as a four-phased program as follows:

- Phase I - Installation Assessment (Records Search) to identify and prioritize those past disposal sites that may pose a hazard to public health or the environment as a result of contaminant migration to surface or groundwater or have an adverse effect by its persistence in the environment. In this phase, it is determined whether a site requires further action to confirm an environmental hazard or whether it may be considered to present no hazard at this time.
- Phase II - Confirmation/Quantification to define and quantify, by preliminary and comprehensive environmental and/or ecological survey, the presence or absence of contamination, the extent of contamination, waste characterization (when required by regulatory agency), and the identification of sites or locations where remedial action is required.
- Phase III - Technical Base Development to develop a sound data base upon which to prepare a comprehensive remedial action plan. This phase includes implementation of research requirements and technology for objective assessment of adverse effects.
- Phase IV - Operations/Remedial Action includes the preparation and implementation of the remedial action plan.

This report contains a summary and an evaluation of the information collected during Phase I of the IRP conducted at Suffolk County Airport and Suffolk County Air National Guard Base (ANGB), formerly SCAFB.

I.D SCOPE

The goal of the first phase of the program is to identify the potential for environmental contamination from past waste disposal practices at two disposal areas located at Suffolk County Airport (formerly SCAFB) and assess the probability of contaminant migration beyond the former installation boundaries. The scope of this report is limited to two sites (identified in subsequent chapters as the Site 1, Runway Disposal Area, and the Site 2, Canine Kennel Landfill) although the records search associated with the study encompassed the entire former facility to collect pertinent information relative to these two sites. The activities undertaken in Phase I included the following:

- Review available base records.
- Visit base.
- Interview key personnel familiar with past disposal practices associated with the two disposal areas.
- Gather pertinent information from federal, state, and local agencies.
- Review and analyze all information obtained.
- Prepare report, including recommendations for further action.

The on-site portion of the records search was conducted from August 4-6, 1986. During this period, interviews were conducted with former key base personnel (Appendix C). A site reconnaissance was conducted at the two sites addressed in this report and other pertinent areas of the former base. In addition, visits were made to local agency offices.

The following core team of professionals was assembled for performing this study and conducting the on-site visit:

- R. C. Tucker, Program Manager
- G. E. Wood, Environmental Engineer and Project Manager
- M. J. McCann, Chemical Engineer
- A. J. Duda, Hydrogeologist
- W. M. Levitan, Ecologist

The Program Manager participated in the initial site reconnaissance but did not participate in the actual formal on-site visit. The resumes for the team members are provided in Appendix A.

I.E METHODOLOGY

The Installation Assessment was initiated with an investigation of activity records at national and regional archives and record centers and U.S. Geological Survey offices. Available records pertinent to the installation's past missions, industrial processes, waste disposal practices, and known environmental contamination were identified and reviewed. Appendix B lists the agencies contacted during the records search. During the on-site visit, past operations and disposal practices were investigated, and potentially contaminated areas were identified. Long-term employees and retirees were interviewed, including personnel from

(1) The 106th Aerospace Rescue and Recovery Group (ARRG) located at the Air National Guard Base, Suffolk County Airport.

(2) Suffolk County Airport employees (previously employed by SCAFB).

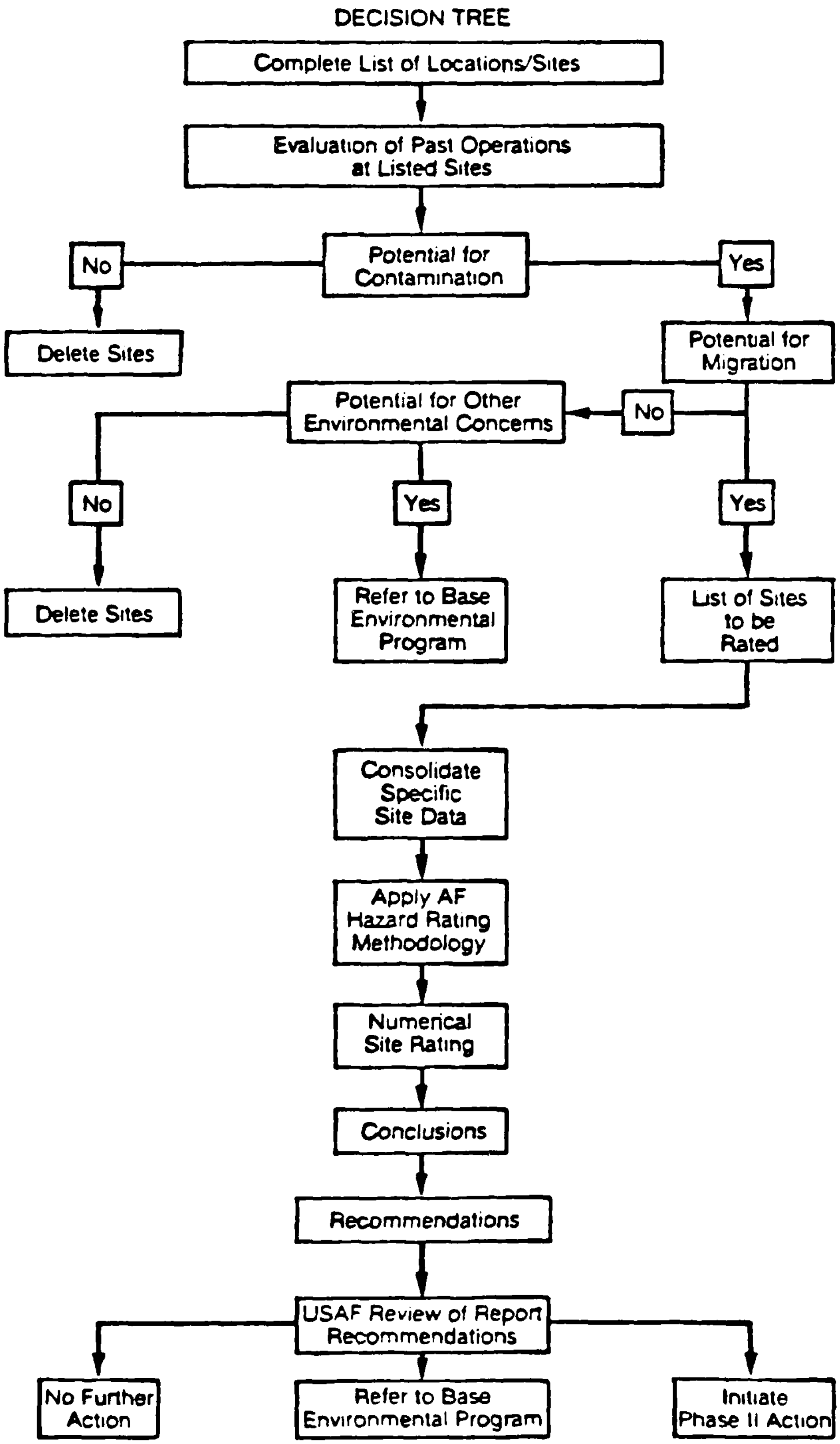
(3) Retirees from the former SCAFB.

Interviewee information is provided in Appendix C.

The on-site visit was conducted from August 4-6, 1986; information in this report is current as of those dates. Information obtained from interviews was verified by data from other sources, where possible, before inclusion in the report.

With information collected during the study, team members evaluated each site for its potential hazard to human health or to the environment. A Hazard Assessment Ranking Methodology (HARM) (Appendix F) was used to systematically evaluate the relative severity of potential problems. In the first step, innocuous sites may be eliminated from further consideration based on types of wastes, containment, and hydrogeology. Where initial evaluation indicated that a site poses a potential threat to human health or to the environment, a numerical ranking model was applied. The model assigns a numerical score from 0 to 100 to each site. HARM rating forms are provided in Appendix G. The numerical score reflects the characteristics of the wastes, the potential migration pathways from the site, and possible contaminant receptors. A Confirmation Study (Phase II) is recommended for sites at which (1) sufficient evidence exists to indicate the presence of contamination and (2) the contamination poses a potential threat to human health or to the environment. Figure 1-1 summarizes the records search (Phase I) methodology.

The results of the Installation Assessment are presented in this report. Chapters II and III describe general installation and site information, history, biology, and physical features. Chapters IV and V present significant findings and conclusions. Recommendations are provided in Chapter VI. References specifically cited within the report are provided in the Reference List. General references consulted are listed in the Bibliography. The reference list and bibliography follow the main report, preceding the Appendices. Appendices A through H provide team resumes, a listing of government agencies contacted, interview information, supplemental environmental setting data, photographs, site HARM rating forms and methodology, and a list of acronyms/abbreviations used in this report.



INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach, New York

FIGURE 1-1
RECORDS SEARCH METHODOLOGY FLOW CHART

II. INSTALLATION AND SITE DESCRIPTIONS

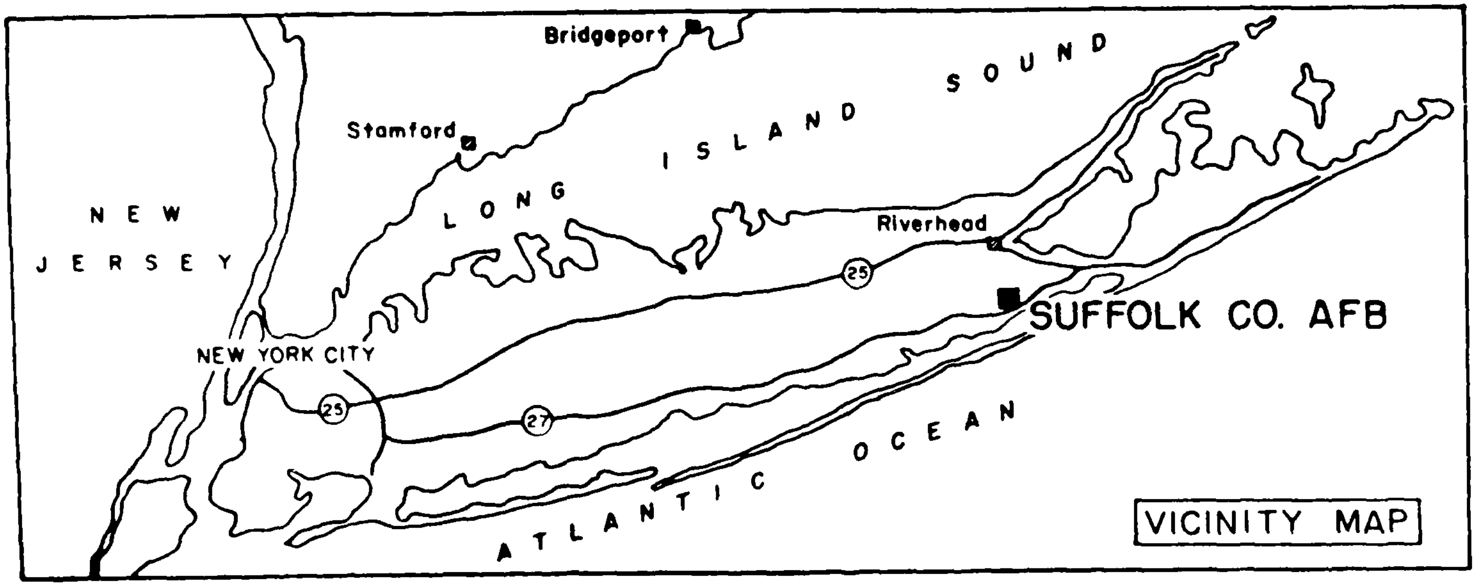
II.A INTRODUCTION

The Suffolk County Airport (SCA) is located on Riverhead Road approximately 2 miles north of Westhampton Beach, New York, on Long Island. The airport was formerly SCAFB. The 106th ARRG of the ANG occupies an area on the west side of the airport, formerly part of the SCAFB. As shown on the vicinity map in Figure 2-1, the SCA is located approximately 3 miles north of the Atlantic Ocean. The area surrounding the base is composed of light industrial, commercial, residential, and undeveloped lands. The topography of the base is flat, with elevations ranging from a high of 80 feet to a low of 10 feet above mean sea level (msl). The former AFB occupied an area of approximately 11,500 acres. The majority of the buildings located at the former AFB are currently occupied by the ANG, the SCA, and private light industrial or commercial establishments. The SCA has leased many former AFB buildings for commercial use. The ANG occupies approximately 70 acres of hangar and maintenance areas of the former base (Figure 2-2).

II.B INSTALLATION HISTORY

During the latter part of 1941, the federal government began acquisition of parcels of land between the towns of Westhampton Beach and Riverhead, in Suffolk County, New York. By the latter part of 1942, a total of 11,500 acres of leased land had been obtained. The Civil Aeronautics Authority (CAA) initially began land acquisition to construct an airport for training purposes. However, in the early part of 1942, it was recognized that the proposed field would be ideal for construction of a training and gunnery base for fighter aircraft. Therefore, construction continued, and the base was erected to most suitably serve as a training field for fighter-type aircraft and as a gunnery range for advanced training of gunnery pilots.

The base was first activated May 17, 1943, as a gunnery training base for fighter pilots and instructors. Fighter groups received gunnery training before going overseas in World War II. The base operated under the auspices of the U.S. Army and was called the Westhampton Beach Army Airfield (WBAAF). In



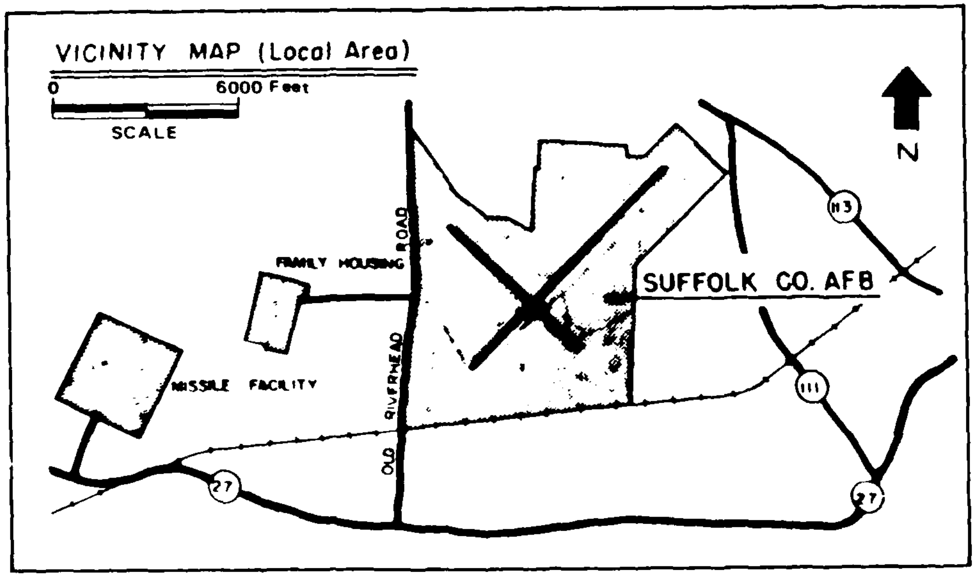


FIGURE 2-1
VICINITY MAP

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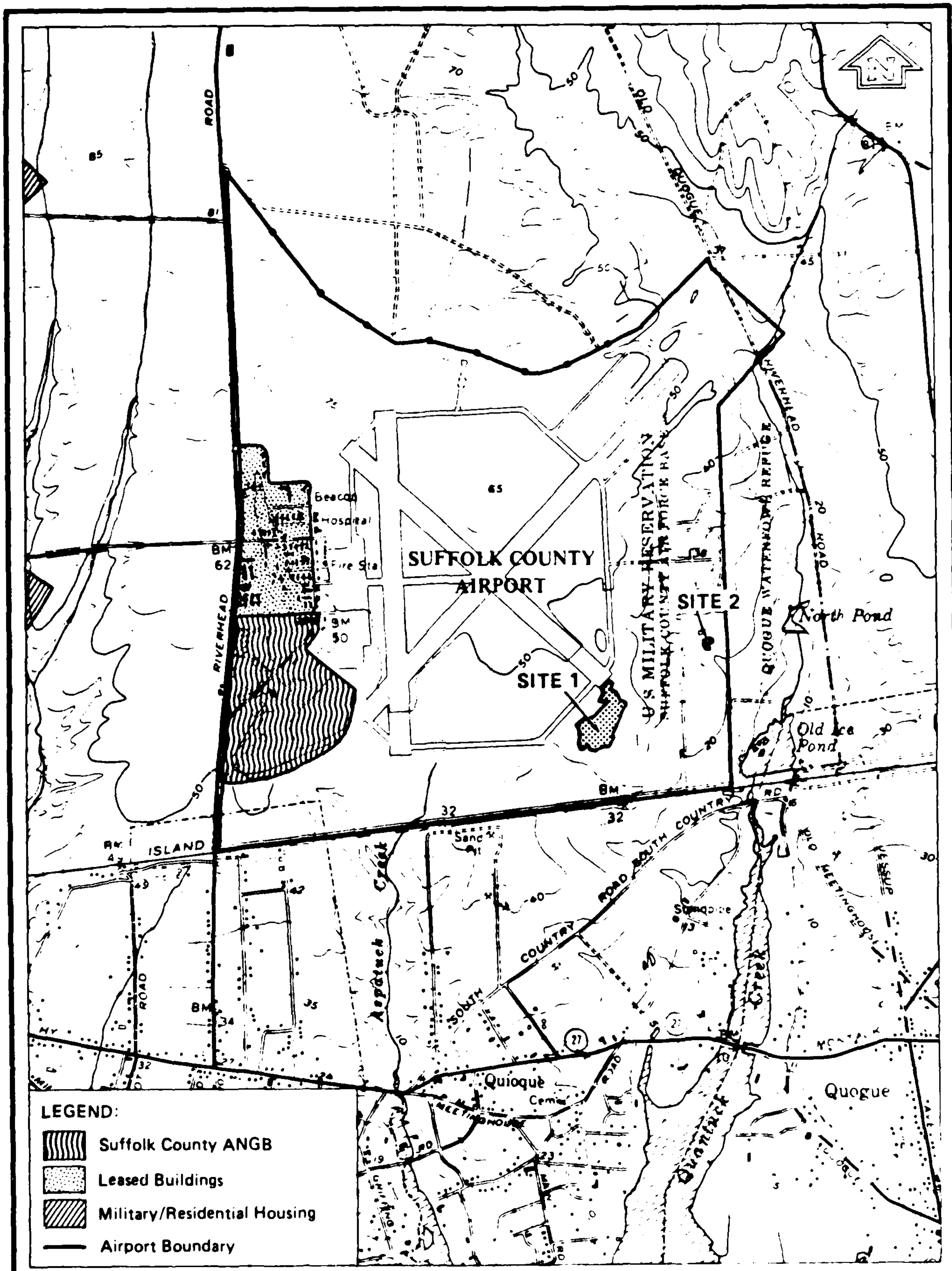
New York



INSTALLATION ASSESSMENT
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Westhampton Beach, New York

FIGURE 2-2
MAP OF SUFFOLK COUNTY AIRPORT

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Scale in Feet

Reference U.S.G.S. Topos 7½ series
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November 1945 the WBAAF was deactivated. From 1948 to 1951, the field was leased and used by the Arabian American Oil Company (ARAMCO) as a training base for its personnel destined for Saudi Arabia. The Korean conflict mobilization caused ARAMCO to vacate the premises and the base to be reactivated in June 1951. At that time the base was reactivated as the SCAFB.

The base was reopened with personnel of the 103rd Fighter Interceptor Wing (FIW) of the Connecticut ANG. After about a year, the 103rd FIW gave way to the 77th Air Base Squadron and its 45th Fighter Interceptor Squadron (FIS). The 519th Air Defense Group took over in 1954 with its two tactical squadrons, the 75th and 331st FIS. In 1955 the 52nd Fighter Group, consisting of the 2nd and 5th FIS, was assigned to SCAFB. The mission of the 52nd Fighter Group was to provide aircraft and crews for interception in air defense; to participate in the USAF mission of antisubmarine warfare; to organize, equip, administer, train, and prepare for combat; and to operate and maintain SCAFB for the support of armed forces personnel or units utilizing the base. In 1958 a Boeing IM-99 (BOMARC) missile site was constructed approximately 5 miles from the base (Figure 2-1), and the 6th Air Defense Missile Squadron was activated. In 1960 the 2nd FIS took over operational duties of the 5th FIS when the 5th FIS departed the base. The 98th FIS was assigned to the group in 1963, and the group became the 52nd Fighter Wing with F-101 planes and 60 BOMARC missles (USAF, 1968).

In 1964 the missile squadron was deactivated, and in 1968 the 98th FIS departed the air base. The base was deactivated and closed in December 1969. With the closing of the base, most of the land was reacquired by Suffolk County. Several small parcels were reacquired by former private owners. The ANG became tenants of the area south of Cook Street on the west side of the airport in 1971. The ANG occupies 70 acres of building sites and aircraft working area. The present mission of the Suffolk County ANGB is aerospace rescue and recovery. The remainder of the former AFB is occupied by the SCA and small commercial establishments.

During the period of base activity from 1943 to 1969, total personnel assigned to the base ranged from approximately 1,600 to 2,400, including officers and enlisted personnel. In 1944 the base supported approximately 2,400 men, but by 1945 this figure had dropped to 1,600. After reactivation of the base in 1951, the AF personnel totaled approximately 2,000, including officers and enlisted men. Prior to deactivation in 1969, the total population was approximately 1,800.

II.C ONGOING AND RELATED STUDIES

This report focuses on two former disposal areas that are located at SCA and were formerly operated by SCAFB (Figure 2-2). It does not encompass all previous waste disposal activities throughout the entire former AFB. A records search of the ANGB, a portion of the former SCAFB, was conducted as a separate study in the first half of 1986. In addition, investigation of potential contamination at the fire training area (FTA) formerly used by SCAFB, ANGB, and local fire departments is ongoing. Investigations by parties other than the AF and ANG are underway at the petroleum, oils, and lubricants (POL) area (Figure 2-3). Previous groundwater monitoring has occurred at the Runway Disposal Area, and soil samples have been collected at the Canine Kennel Landfill after transformer removal from this area in 1984. Results from these investigations are further discussed in Sections III and IV.

II.D SITE DESCRIPTIONS

This report discusses and evaluates two former disposal areas at the SCA. For purposes of this report, these sites have been identified as (1) Site 1, Runway Disposal Area, and (2) Site 2, Canine Kennel Landfill. Although Site 1, Runway Disposal Area, has previously been referred to as a landfill, the area has been primarily a surface disposal area rather than a burial site, and therefore, for clarity this site is referred to in this report as a disposal area. Site 2, Canine Kennel Landfill, has been so named in previous documents (ERCO, 1984). It has been so named due to its location near the Canine Kennels formerly operated by the SCAFB. Locations of Sites 1 and 2 are shown in Figure 2-2. The following sections present a discussion of each of these two sites. Photographs taken at these sites during site inspections in August 1986 are provided in Appendix E.

II.D.1 Site 1, Runway Disposal Area

Site 1 is located in the southeast corner of the former SCAFB at the southeast end of the northwest-southeast Runway 33 extension. As shown in Figure 2-4, the site encompasses an area of approximately 8.7 acres and is bounded to the west, south, and east by woods. Historical aerial photographs of the installation indicate that the entire 8.7-acre area was cleared of vegetation sometime after 1951 and prior to 1961. A 1958 map of the installation indicates that the area had been cleared by that time.

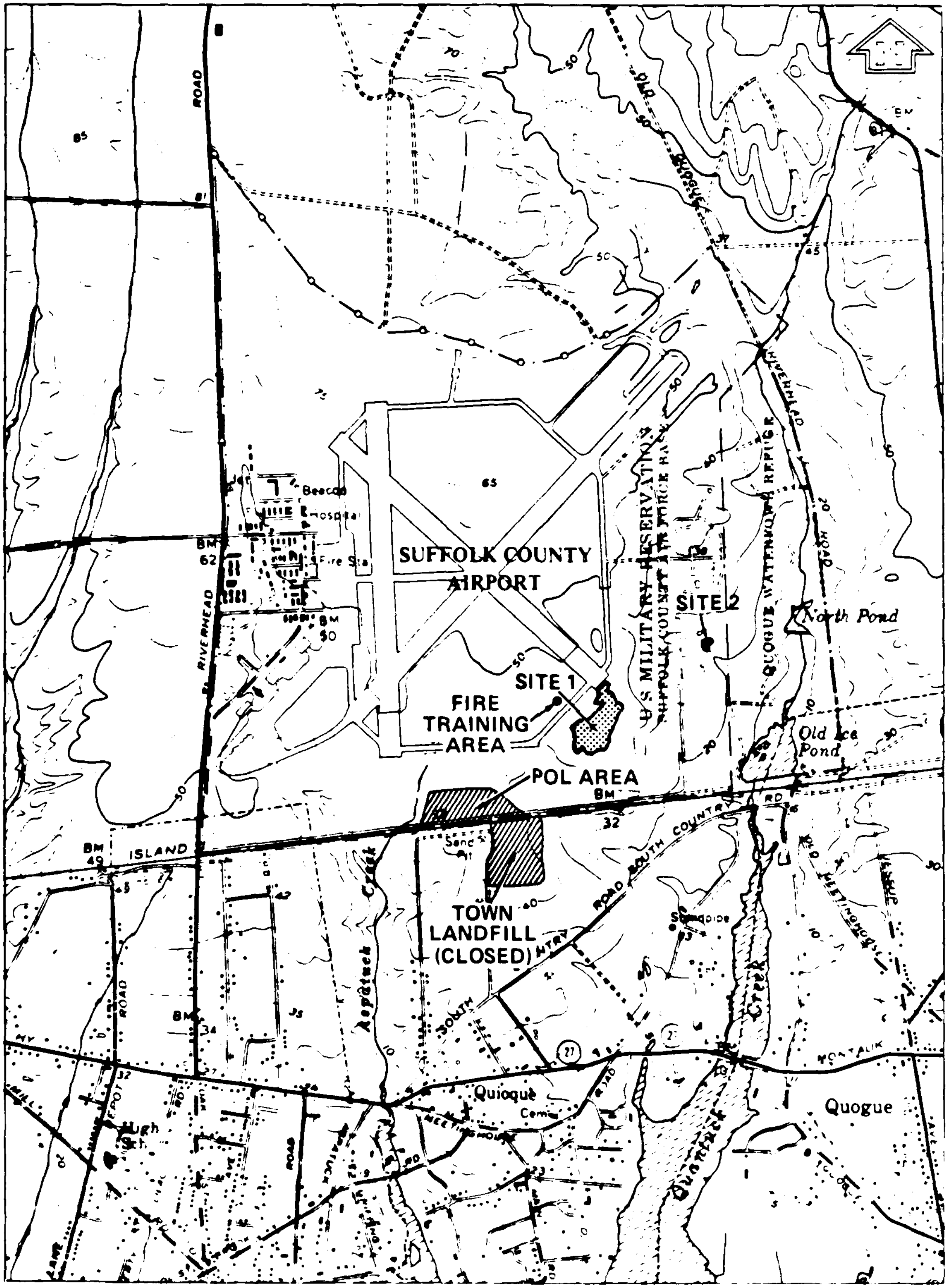

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FIGURE 2-3
LOCATION MAP FOR SIGNIFICANT AREAS IDENTIFIED AT SUFFOLK COUNTY AIRPORT

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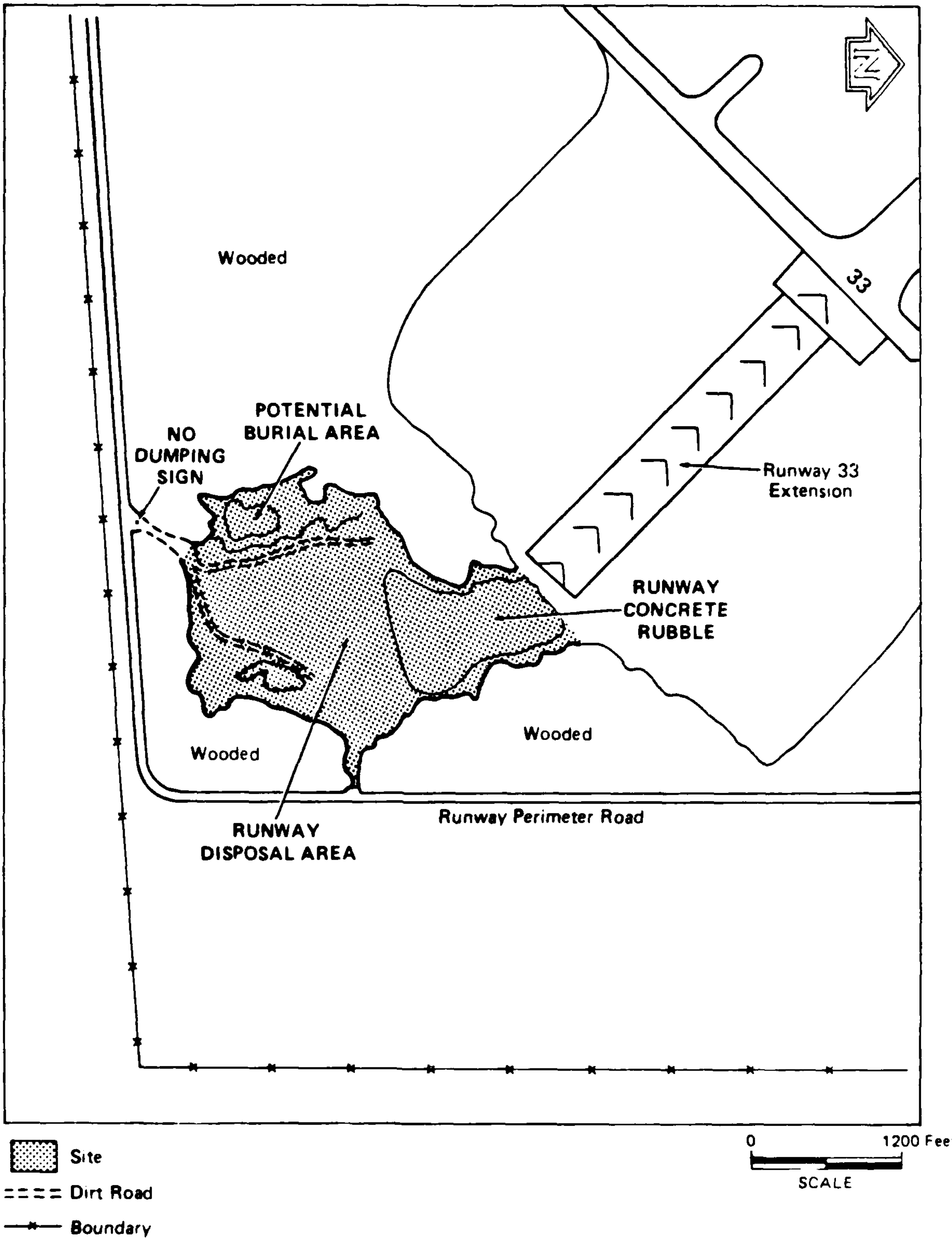
Scale in Feet

Reference U.S.G.S. Topos, 7½' series
Eastport, N.Y. 1956; Quogue, N.Y. 1956



INSTALLATION ASSESSMENT
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Westhampton Beach,
New York

FIGURE 2-4
SITE 1, RUNWAY DISPOSAL AREA

The northern edge of the site abuts the end of the runway 33 extension. The site is accessed by a runway perimeter road along the installation boundary to the south. The eastern access road shown on Figure 2-4 has been blocked off to prohibit vehicle entry. A "No Dumping" sign has been posted in the center of the southern entrance road to prohibit vehicle access to the former disposal area. Evidence of a former road is present inside the southern and eastern borders of the disposal area.

The site is relatively flat, although a steeply sloped embankment bounds the site on its western edge. The embankment and a small area at the toe of the embankment are barren sand. The elevation change from the bottom to top of the embankment is approximately 20 feet. An area of approximately 400 square feet near the toe of the embankment and immediately northwest of the entrance (Figure 2-4) was reportedly used as a burial site in the mid-to-late 1970s although the contents and exact location of the pit are unknown. The evidence of land disturbance, lack of ground cover, and isolated scattering of half-buried debris observed during the site reconnaissance of this area on August 4-6, 1986, indicates the potential for landfilled material in this area.

The site was operated as a disposal area from about the mid-1950s to 1982. The area was used by the SCAFB from the mid-1950s until deactivation and closure of the base in 1969. The SCA, its tenants, and private contractors at the SCA used this area from 1970 to 1982. Use of this site as a disposal area was officially prohibited about 1982 although unauthorized dumping at this site has occurred since 1982. During an inspection of the site in August 1986, it was evident to the project team that wastes had been disposed of at this site as recently as 1985.

Significant findings concerning operational use of the site and types and quantities of wastes disposed of at the site during the 30-year period of use, as well as potential contaminant receptors and the potential for contaminant migration, are discussed in Section IV.

II.D.2 Site 2, Canine Kennel Landfill

As shown in Figure 2-5, Site 2, Canine Kennel Landfill, is located near the eastern boundary of the former base. The site is situated adjacent to a boat yard that was the former location of the base Defense Reutilization and Marketing

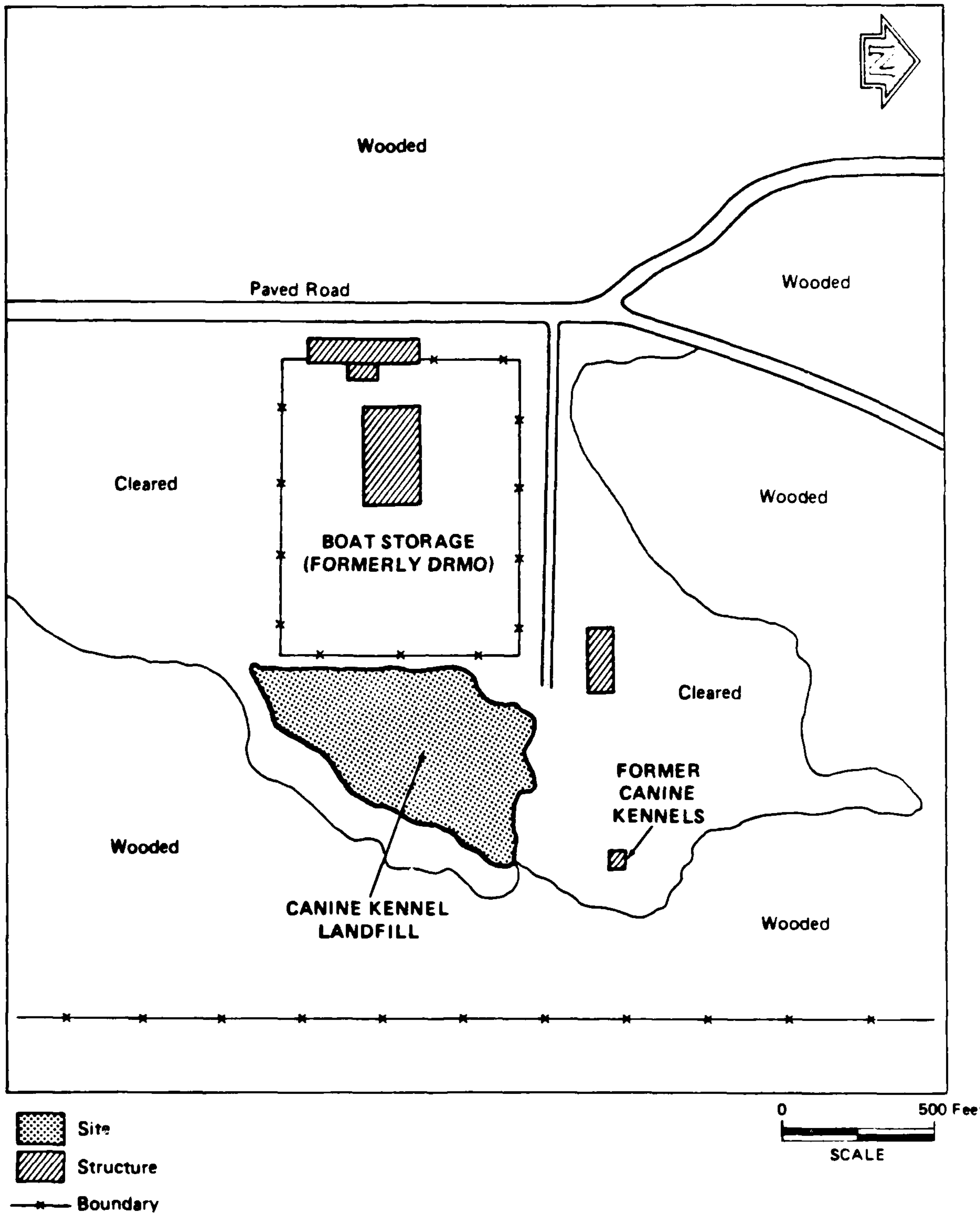

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FIGURE 2-5
SITE 2, CANINE KENNEL LANDFILL

Office (DRMO) and salvage yard. The DRMO area is currently being leased for boat storage. The western boundary of the site is formed by the fence of the DRMO area. The site is bounded to the east and south by forest. The area north of the site is cleared, with occasional pitch pine and grasses. Canine kennels used during base operation are located approximately 500 feet north of the site. The site covers an area of approximately 1 acre although the exact boundaries of the site are unknown. The site was used as a landfill by SCAFB for approximately 2 months (March to May) in the spring of 1970. The landfill was operated by SCAFB personnel after the official closing date of the base, in December 1969, but before all base personnel had officially vacated the premises. The approximate depth of the landfilled material was reported to have been between 10 and 15 feet.

The surface of the landfill is currently disturbed sand with grasses and occasional pines. The terrain indicates that topographic changes have occurred within the site area. The majority of the area is barren due to the lack of soil cover suitable to support vegetation. The site itself is filled with mounds and gullies, and erosion has occurred across the site. A shallow (1- to 2-foot) gully starts at the northwest corner of the site and heads southeastward into the central landfill area. Based on visual inspection of the site in August 1986, the northeast corner of the site appears to have been the borrow and fill area. Approximately 8- to 10-foot-high sandpiles exist in this area, which are reportedly a result of a bulldozer pushing the sand out of the burial area toward this area in order to stockpile it for further use. It appears that earth moving has occurred since site use by SCAFB was terminated in 1970. The central area is currently 2 to 3 feet below the surrounding land surface. The topography was disturbed during transformer removal from this area in 1984. Severely rusted scrap metal, half-buried in the sand, is evident in isolated areas.

Significant findings concerning operational use of the site and types and quantities of wastes disposed of in the landfill during its use, as well as potential contaminant receptors and the potential for contaminant migration, are discussed in Section IV.

III. ENVIRONMENTAL SETTING

III.A METEOROLOGY

Although located within 3 miles of the Atlantic Ocean, the climate in the area surrounding the SCA is humid-continental. This is because the air masses and weather systems affecting the study region have their origin principally over the land area of North America. Nonetheless, a maritime influence is also significant. Such characteristics of the climate as an extended period of freeze-free temperatures, a reduced range in diurnal and annual temperature, and heavy precipitation in winter relative to that in summer are a result of maritime exposure (Warner, Jr., et al., 1975). Table 3-1 provides a summary of climatological data (temperature and precipitation) as recorded at Riverhead, 7 miles due north of SCA.

The winter season, which has moderately severe conditions, lasts about three months in Suffolk County. In general, a temperature of 0°F, or colder, is recorded on 1 or 2 days in about one winter out of four. In most winters, the coldest temperatures range betwen 0 and 10°F. Average recorded temperature at nearby Brookhaven National Laboratory between October 1 and April 30 is 40°F. The average seasonal snowfall total is 26 to 32 inches. Although a snow cover can be expected between late December and early March, the normal moderate winter temperatures result in frequent extended periods of bare ground (Warner, Jr., et al., 1975).

Summers are warm, mainly because of the moderating effect of the ocean on nighttime cooling. Minimum temperatures are frequently in the mid 60s to low 70s from mid-June through mid-September. Temperatures of 90°F or higher occur on an average of from 4 to 6 days. Prevailing winds from the south or southwest in summer favor conditions of high humidity. The freeze-free growing season is about 200 to 210 days in much of Suffolk County (Warner, Jr., et al., 1975).

Precipitation at SCA is approximately 44.5 inches per year. Droughts are not uncommon in the area. More than once a year, on the average, there is a "dry spell," a period of at least 15 consecutive days, none of which receives 0.05 inch or more of precipitation. Approximately once every 2 years there is an "absolute drought," that is, 15 consecutive days, none of which receives 0.01 inch or more of

TABLE 3-1

Temperature and Precipitation Data at
Riverhead, Suffolk County, New York

Month	Temperature				Precipitation				
	Average daily maximum	Average daily minimum	7 years in 10 will have—		Average monthly total	3 years in 10 will have—		Snowfall	
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		More than—	Less than—	Average monthly total	4 years in 10 will have more than—
	°F.	°F.	°F.	°F.	In.	In.	In.	In.	In.
January	38	24	52	11	3.6	3.8	2.9	7	6
February	39	25	51	13	3.3	3.9	2.4	7	7
March	46	31	61	21	4.2	5.0	3.0	6	5
April	58	39	74	30	3.6	4.2	2.9	([1])	([2])2
May	69	49	81	39	3.5	4.6	2.0	0	
June	78	58	90	47	2.7	3.5	1.9	0	
July	83	64	90	55	3.3	4.0	2.1	0	
August	81	64	87	53	4.3	4.8	2.4	0	
September	75	57	84	44	3.1	3.7	1.6	0	
October	65	48	79	35	3.1	4.0	2.3	0	([1] [2])
November	54	38	66	26	4.5	5.8	3.1	([1])	([2])1
December	42	28	57	14	4.2	5.5	2.9	6	7
Year	61	44	92	7	43.4	46.5	40.6	26	28

[1] Trace.
[2] One year in 10 will have more.

SOURCE: Warner, Jr., et al., 1975.

rain (Brodo, 1968). By calculating net precipitation according to the method outlined in the Federal Register (47 FR 31224, July 16, 1982), a net precipitation value of 14.5 inches per year is obtained. Rainfall intensity based on 1-year, 24-hour rainfall is 2.75 inches (calculated according to 47 FR 31235, July 16, 1982).

III.B PHYSICAL GEOGRAPHY

III.B.1 Topography and Drainage

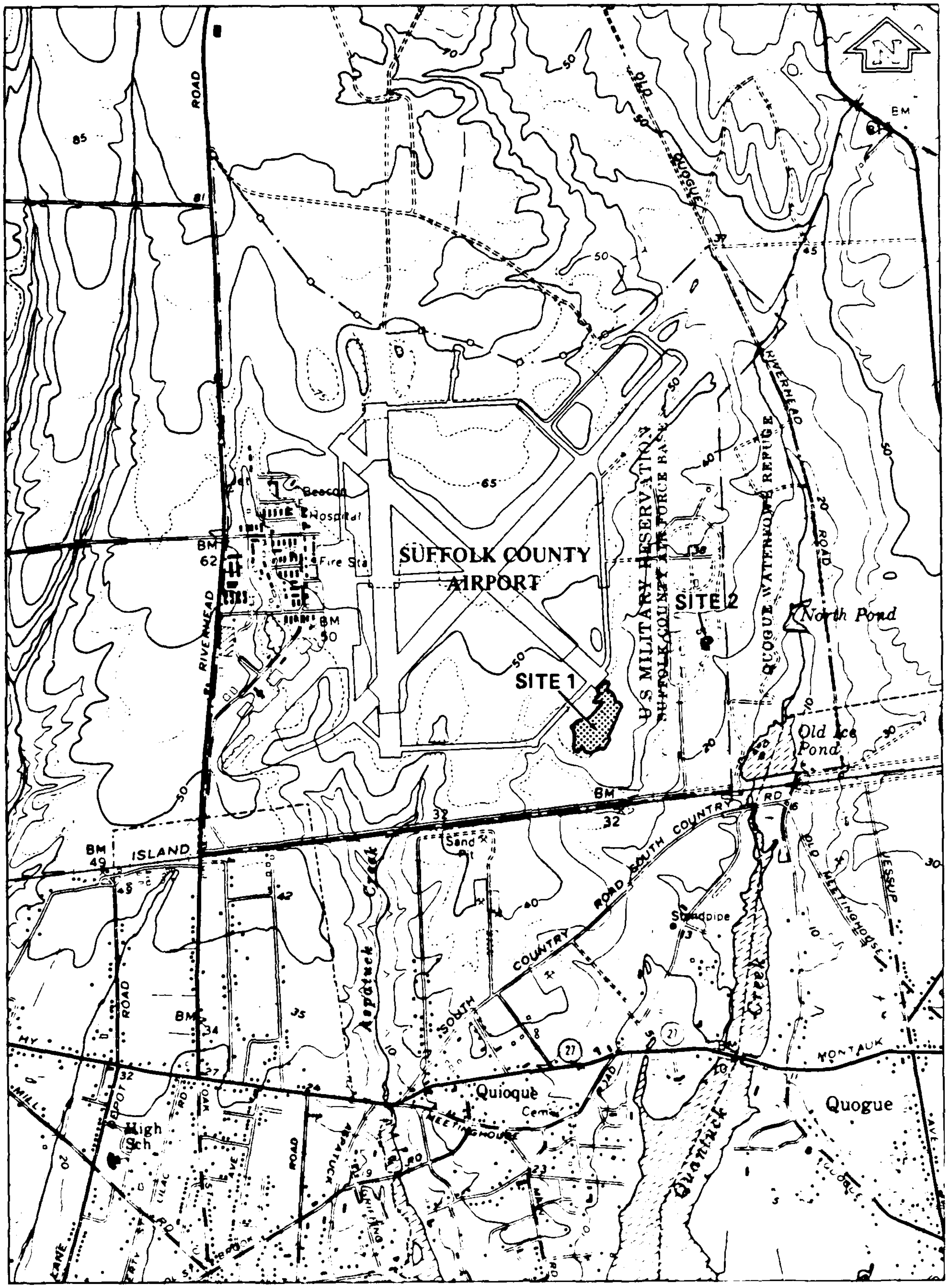
SCA is located on a glacial outwash plain south of the Ronkonkoma moraine, which was formed during the Wisconsin glacial stage. The outwash plain slopes gently from the moraine to the bays, barrier islands, and Atlantic Ocean, which form the southern boundary of Long Island. Relief at the airport is also gently sloping with elevation ranging from 10 feet msl at the southeast corner to slightly over 80 feet msl at the northwest corner (Figure 3-1). The topography has been altered somewhat due to grading for the construction of the airport runways. The SCA slopes to the south and to the southeast toward Aspatuck Creek and Quantuck Creek, respectively. Overall slope at the SCA is less than 0.5 percent; maximum slopes are approximately 2.5 percent along the edges of the runways and at the headwaters of Aspatuck Creek.

Much of the rainfall percolates within the soil and moves vertically to the subsurface aquifer. However, any surface drainage on the western portion of the airport flows to Aspatuck Creek, while drainage on the eastern portion is to Quantuck Creek. The only surface-water feature on the site is the intermittent channel of Aspatuck Creek.

Both the Site 1, Runway Disposal Area, and Site 2, Canine Landfill, are in the Quantuck Creek drainage basin. Site 1 is at an approximate elevation of 30 feet msl and is generally flat although it contains numerous mounds of construction debris and is bordered on the west by a relatively steep sandy slope. The elevation at Site 2 is approximately 25 feet msl. The site contains several pits, gullies, and mounds that were apparently formed by earth-moving equipment.

III.B.2 Soils

The soils present at the SCA consist of two associations--the Riverhead-Plymouth-Carver Association and the Plymouth-Carver Association. A description of each of these units follows. A soil associations unit map of SCA is provided in Figure 3-2. The physical properties of these soils are provided in Table 3-2.

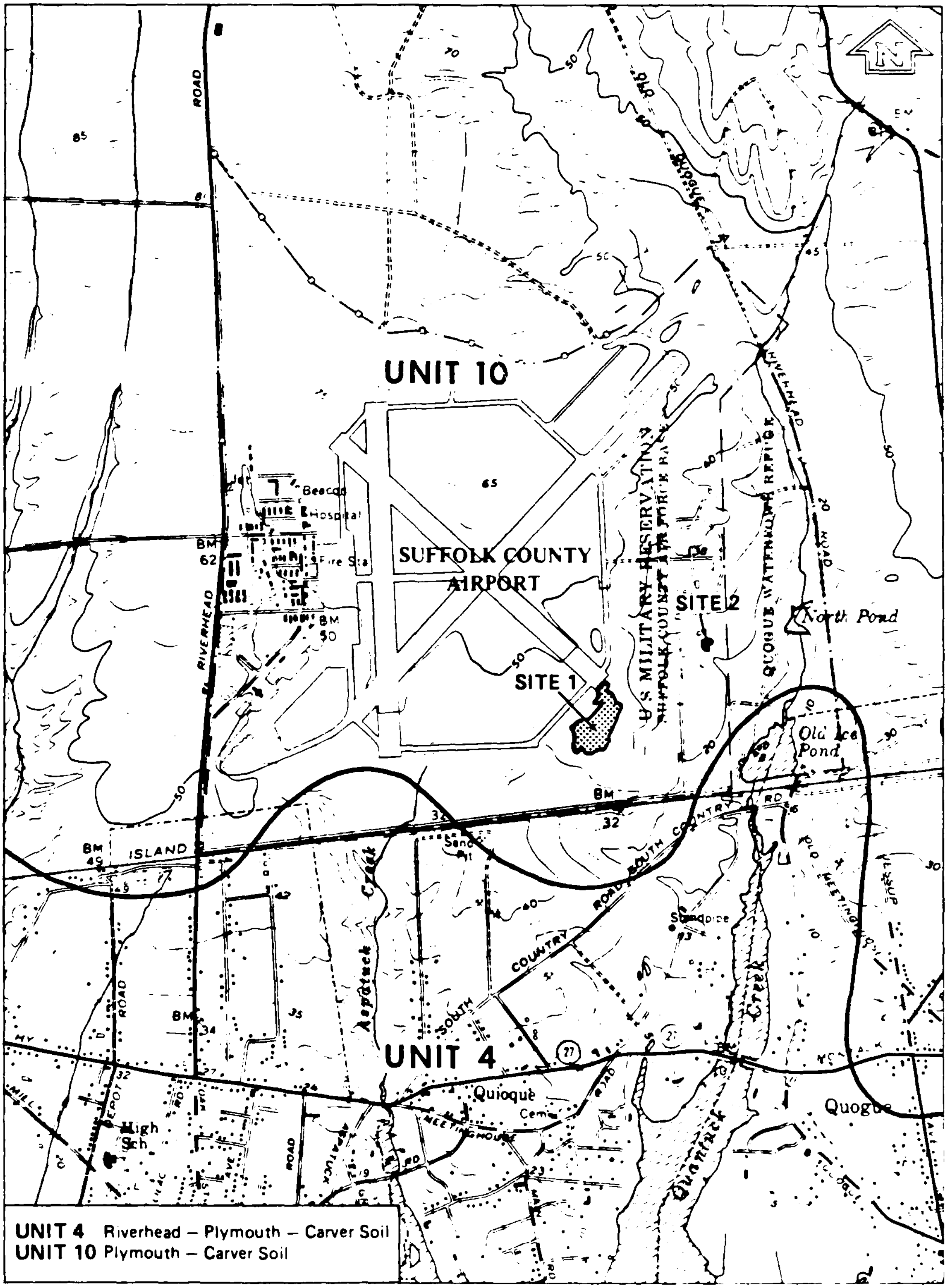


INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach, New York

FIGURE 3-1
TOPOGRAPHY OF SUFFOLK COUNTY AIRPORT AND VICINITY

0 — 2000
Scale in Feet

Reference U.S.G.S. Topos, 7½' series, Eastport, N.Y., 1956 Quogue, N.Y., 1956



INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach, New York

FIGURE 3-2
SOIL ASSOCIATIONS UNIT MAP

0 2000
Scale in Feet

Reference U.S.G.S. Topos 7½ series
Eastport, N.Y. 1956 Quogue, N.Y. 1956

TABLE 3-2

Physical Properties of Soils at Suffolk County Airport,
Westhampton Beach, New York

Properties	CbA - Carver (unit 10) ---Depth (inches)---		PIB - Plymouth (unit 10) ---Depth (inches)---	
	0-22	22-60	0-27	27-58
Texture	Fine to coarse sand	Coarse sand to gravelly sand	Loamy sand, loamy fine sand, gravelly loamy sand, and sand	Sand and gravel, coarse sand, and gravelly coarse sand
Unified Soil Classification System	SP-SM, SW-SM	SP, SP-SM	SM, SP-SM	SP, GP, SP-SM, GP-GM
Percent Silt and Clay	5-10	0-10	5-25	0-10
Percolation Permeability (inches/hour)	6.3	6.3	6.3	6.3
Available Moisture Capacity (inches/inch)	0.03-0.04	0.02-0.04	0.04-0.08	0.02-0.04
pH Reaction	4.5-5.5	4.5-5.5	4.5-5.5	4.5-5.5
Depth to Seasonal High Water Table (feet)	4		4	
Site Affected	2		1	

Source: Warner, Jr., et al., 1975.

Unit 4, Riverhead-Plymouth-Carver Association--Deep, nearly level to gently sloping, well-drained, and excessively drained, and moderately coarse-textured and coarse-textured soils on the southern outwash plain make up this unit. This association makes up approximately 5 percent of the SCA area, all of it underlying the drainage basin near the southwestern corner of the property and beneath the extreme southeast corner of SCA. In Suffolk County this association is found in broad areas on the southern outwash plain. It is characteristically nearly level, and slopes range mainly from 1 to 6 percent; but on the sides of drainage channels, slopes range from 8 to 35 percent. This plain has been laid down by outwash deposition beyond the limits of the glacier and is not pitted. The southern edge of the association that adjoins the Great South Bay and Moriches Bay is indented by many short tidal creeks.

This association makes up 21 percent of Suffolk County and is composed of mostly Riverhead soils, Plymouth loamy sand soils, and Carver and Plymouth sands. Less than 15 percent of this association is composed of minor sands.

Riverhead soils are deep and well drained. The surface layer and the subsoil are sandy loam. In many places, however, the lower part of the subsoil is loamy sand. The substratum is sand and gravel. Depth to the substratum ranges from 22 to 36 inches. Plymouth soils are deep and excessively drained. The surface layer and the subsoil are loamy sand or sand. The substratum is sand and gravel. Depth to the substratum ranges from 20 to 36 inches. The nearly level Riverhead and Plymouth soils are dominant on broad, flat areas between intermittent drainageways, but the Riverhead soils are at slightly higher elevations and at greater distances from the drainageways than the Plymouth soils. Carver soils are deep and excessively drained. The surface layer and the subsoil are sand. The substratum is sand and gravel. Depth to the substratum ranges from 16 to 32 inches. Steeper Carver soils are on the sides of intermittent drainageways. In a few areas Carver soils are on broad flats adjacent to the drainageways.

Among the minor soils in this association are Haven soils that are adjacent to Riverhead soils but at slightly higher elevations. Other minor soils are Berryland, Walpole, and Wareham soils, which have a high water table and are of the land-type tidal marsh. They are generally along the margins of tidal creeks or at the southern ends of drainageways that have elevations near that of the water table.

The suitability of the soils of this association for farming is somewhat limited by the coarse-textured Plymouth and Carver soils; however, areas of Riverhead soils are suited to most locally grown crops. Effluent from cesspools and septic tanks contributes to contamination of groundwater in areas where the groundwater is near the surface. The wet soils in the association have severe limitations for most nonfarm uses (Warner, Jr., et al., 1975).

Unit 10, Plymouth-Carver Association, Nearly Level and Undulating--Deep, excessively drained, coarse-textured soils on outwash plains make up this unit. This area is on outwash plains and characteristically is nearly level. Widely spaced drainageways are the only breaks in these flat areas. The western part of the association has a greater proportion of strongly sloping soils than the eastern part. The eastern area, laid down by preglacial outwash, is not pitted. Slopes generally range from 1 to 8 percent, but a few areas are steeper.

Approximately 95 percent of SCA overlies soils in this association. Site 1, Runway Disposal Area, and Site 2, Canine Kennel Landfill, overlie the Carver and Plymouth fraction of this association. Riverhead and Haven soils are well drained. Atison, Berryland, and Wareham soils are more poorly drained, and they are in areas around creeks and ponds and adjacent to tidal marshes. The association characteristically has a poor cover of scrub oak, pitch pine, and white oak.

The major soils in this association are coarse-textured, droughty, and low in fertility. They are poorly suited to most crops commonly grown in the county. Except for their coarse texture, these soils have few limitations for nonfarm uses. Because of their droughty nature, limitations are severe on these soils for use in establishing and maintaining lawns and foundation plantings. Waste from cesspools and septic tanks can contaminate groundwater supplies beneath the rapidly permeable soils. Minor soils that have a high water table have severe limitations for nonfarm use (Warner, Jr., et al., 1975).

The two sites investigated in this report lie upon two soil series of Unit 10, Plymouth-Carver Association. These two soils, Plymouth Series and Carver Series, are described below. Soil descriptions are from Warner, Jr., et al. (1975).

Plymouth Series. The Plymouth series consists of deep, excessively drained, coarse-textured soils that formed in a mantle of loamy sand over thick layers of

stratified coarse sand and gravel. These nearly level to steep soils are on gently sloping to level outwash plains. Native vegetation consists of white oak, black oak, pitch pine, and scrub oak.

In a representative profile the surface layer is very dark grayish-brown loamy sand, about 4 inches thick in wooded areas. The subsoil is yellowish-brown and brown, very friable and loose loamy sand to a depth of about 27 inches. The substratum, to a depth of about 58 inches, is yellowish-brown, loose, gravelly, coarse sand.

Plymouth soils have low to very low available moisture capacity. Natural fertility is low. Reaction is strongly acidic to very strongly acidic throughout the profile. The root zone is confined mainly to the upper 25 to 35 inches. Internal drainage is good. Permeability is rapid in all of these soils except in those of the silty substratum phase. Site 1, Runway Disposal Area, was built upon the Plymouth loamy sand (PIA) phase of the Plymouth series. This phase is found on slopes of 0 to 3 percent. This soil has the profile described as representative of the series. It is mainly on outwash plains south of the Ronkonkoma moraine. The areas generally are nearly level, but they are somewhat undulating in some places. Included with this soil are some loamy sands that have a profile similar in appearance to the soils of the Carver series. The hazard of erosion is slight on this Plymouth soil. This soil is fairly well suited to crops commonly grown in the county. Many areas were formerly cleared for farming, but most of these areas are idle or are in brush or trees.

Carver Series. The Carver series consists of deep, excessively drained, coarse-textured soils. These soils are nearly level to steep and are throughout the county on rolling moraines and broad outwash plains. Slopes range from 0 to 35 percent. Native vegetation is white oak, black oak, scrub oak, and pitch pine.

In a representative profile a thin layer of leaf litter and partly decayed organic matter is on the surface. Below this is the surface layer of dark-gray sand about 3 inches thick. The subsurface layer is gray or light-gray loose sand to a depth of 8 inches. The subsoil is loose sand to a depth of about 22 inches. It is brown in the upper part and strong brown in the lower part. The substratum, to a depth of 60 inches, is loose sand that contains some gravel. It is light yellowish-brown to brownish-yellow to a depth of 31 inches. Below this, it is light yellowish-brown.

Carver soils have very low available moisture capacity. Natural fertility is very low. Permeability is rapid throughout. The root zone is mainly in the uppermost 30 to 40 inches. Site 2, Canine Kennel Landfill is found on an area which originally belonged to the Carver and Plymouth sands (CpA) phase of the Carver Series. This phase is found on slopes of 0 to 3 percent.

These soils are mainly on outwash plains; however, they are also on some flatter hilltops and intervening draws on moraines. A small part of this mapping unit is slightly undulating. This unit can be made up entirely of Carver sand, entirely of Plymouth sand, or of a combination of the two soils.

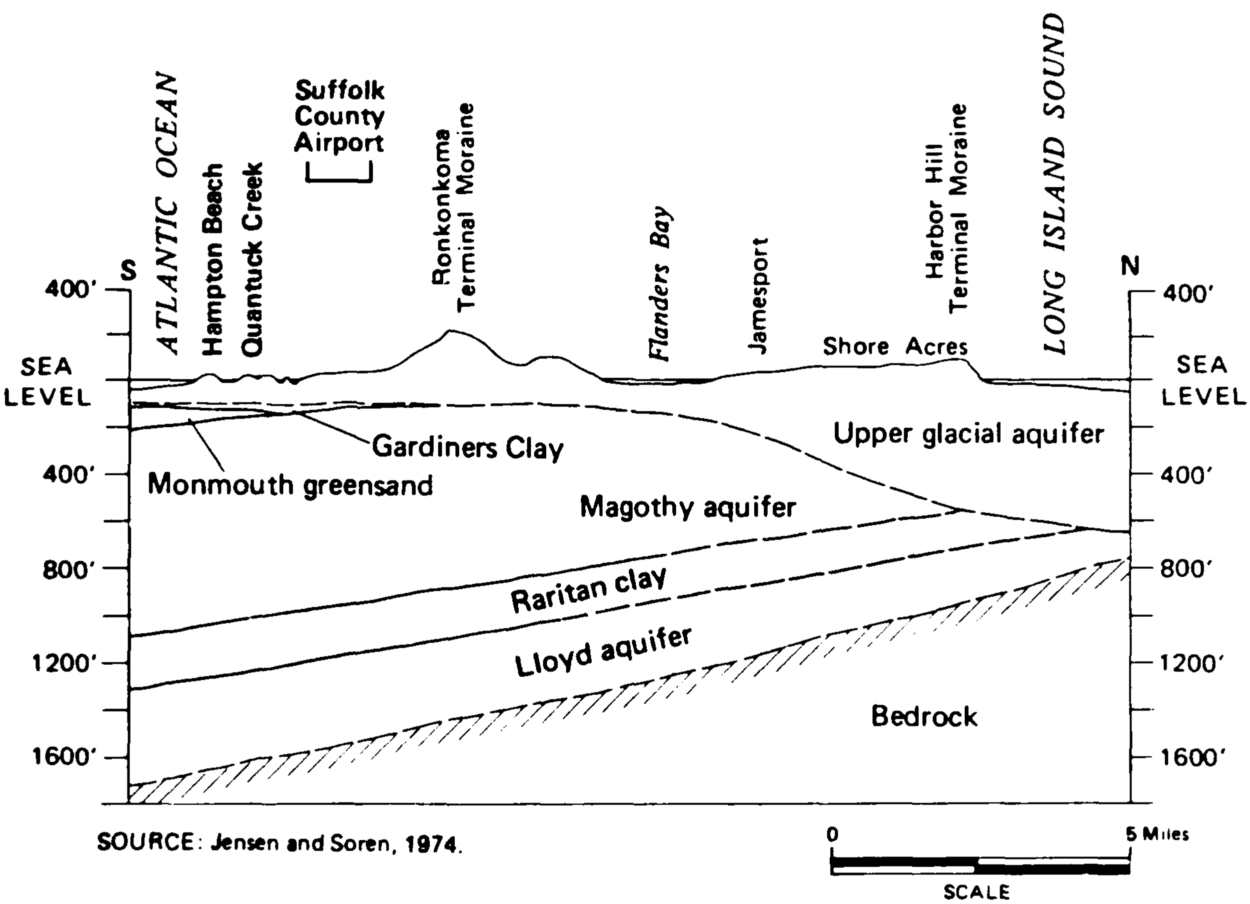
Included with these soils in mapping are small areas of Plymouth loamy sand and areas of loamy sands that have a profile similar to soils of the Carver series. Also included are soils like Carver soils that have dark iron and humus coatings on the sand grains in the upper part of the subsoil.

The hazard of erosion is slight on the soils in this unit. These soils are droughty. Natural fertility is low. These soils are not well suited to the crops commonly grown in the county. Because these soils tend to be droughty, lawns and shrub plantings are difficult to establish and maintain. Almost all of this unit has been let in woodland or in brush. Many areas previously cleared for farming are now idle.

III.B.3 Geology

Five unconsolidated formations above the bedrock are found below, or near, the SCA. These units dip generally to the south with the thicker units very widespread and underlying most of Suffolk County. Figure 3-3 is a generally north-south-trending cross section of the geologic formations present below the airport.

Bedrock--The bedrock that underlies the unconsolidated deposits includes hard, dense schist, gneiss, and granite similar in character to that which underlies much of the mainland in nearby parts of New York and Connecticut. Elevation of the bedrock is approximately 1,500 feet below msl at the northern end and 1,600 feet below msl at the southern end of the airport. These rocks are either metamorphosed Precambrian or early Paleozoic Age sediments. Two deep borings penetrated bedrock at a depth of approximately 1,600 feet at locations 18 miles west of the airport. The bedrock was hard, banded, granitic gneiss.



SOURCE: Jensen and Soren, 1974.

INSTALLATION ASSESSMENT SUFFOLK COUNTY AIRPORT Westhampton Beach, New York	FIGURE 3-3 GEOLOGIC CROSS-SECTION OF FORMATIONS BENEATH SUFFOLK COUNTY AIRPORT

Mineralogy of the gneiss showed almost 50 percent plagioclase feldspar, almost 50 percent quartz, about 1 percent biotite, and a trace of garnet (de Laguna, 1963). The surface of the bedrock below the airport dips almost directly southward with an average gradient of 1 percent.

Raritan Formation--The Raritan formation rests directly on highly to slightly weathered bedrock. The formation is probably entirely continental and was laid down as a coastal-plain deposit by streams flowing off the mainland. On Long Island the formation has two fairly distinct members: the Lloyd sand member below and a clay member above.

The formation probably occurs beneath all central Suffolk County. Northward the Lloyd sand thins and probably pinches out beneath Long Island Sound, and the clay member may do likewise. Southward the formation extends a considerable distance offshore, possibly as far as the continental shelf (about 100 miles).

Lloyd Sand Member of the Raritan Formation--The Lloyd sand member is a fairly uniform and extensive unit consisting predominantly of sand and gravel with some clay. It is known only from well logs. At two deep test wells it is separated from the hard crystalline bedrock by 15 to 30 feet of tough, white, structureless clay containing scattered angular grains of quartz, which is considered to be weathered bedrock. The upper contact of the Lloyd sand member with the overlying clay member is fairly definitely marked by a change in the lithology of the sediments.

The Lloyd sand member is about 400 feet thick. It is largely composed of fine to coarse sand containing silt and clay in the interstices. It also includes beds of clay or sandy clay and coarser textured beds that contain gravel. Near the middle, the unit consists chiefly of sand and coarse gravel, which contains some pebbles at least 2 inches in diameter. The voids between the pebbles are for the most part filled with sand and some clay. The porosity of the unit is appreciably less than that of a well-sorted sand or gravel.

The pebbles and the sand found in the Lloyd member are composed almost entirely of quartz. This composition suggests that the material was derived from a region in which the climate was warm and the rate of erosion slow so that all but the most resistant material was entirely decomposed. The clay is entirely or

dominantly kaolinite, a mineral indicative of complete weathering (de Laguna, 1963).

Clay Member of the Raritan Formation--The clay member, which overlies the Lloyd sand, makes up the balance of the Raritan formation. The top of the clay member is approximately 1,000 feet below msl at the airport. Its thickness is about 200 feet. It is largely composed of tough dark-gray or black lignitic clay and some red and white clay and includes some sandy layers and thin lenses of gravel. It also contains some light-gray silty and sandy clay. It is not clearly bedded because the textures and colors grade into one another. Zones containing well-marked, narrow bands of light silty clay alternate with darker clay.

The clay member shows little, if any, systematic variation in thickness on Long Island. In most of the carefully logged wells that penetrate it, the clay is about 200 feet thick, and at least some of the greater or lesser thicknesses reported may be due to difficulty in placing the contacts, for these depend only on differences in lithology.

Like the Lloyd member below and the Magothy formation above, the clay member has not yielded any fossils except plant remains and is probably nonmarine. The scattered pieces and grains of lignite, the widely distributed spores and pollen, the casts of twigs and leaves, and the possible varving suggest deposition on a coastal plain by generally sluggish, but sometimes flooded, rivers that drained a deeply weathered area of moderate relieve. The coarser grained materials found in seams probably are lenses of limited extent both horizontally and vertically and may act as relatively permeable but devious paths for the movement of water (de Laguna, 1963).

Magothy Formation--The Magothy formation is a thick body of continental deposits composed of lenses of sand, sandy clay, clay, and some gravel. It rests on the Raritan formation and is in turn unconformably overlain by upper Pliestocene deposits. The greatest thickness revealed by drilling is about 1,000 feet. The present upper surface of the Magothy on Long Island is an erosional surface, and the original total thickness is not known.

The Magothy formation underlies most of Long Island except for some western areas where it was removed by erosion. It may extend beneath Long Island Sound but is probably truncated by erosion and overlain by Pleistocene deposits.

To the south, the Magothy formation, like the Raritan, extends out under the sea, where it also probably changes from a terrestrial to a marine deposit.

The Magothy is composed of beds of poorly sorted quartzose sand mixed and interbedded with silt and clay, and locally it contains pebbles or small lenses of gravel. Sandy clay and clayey sand make up most of the fine beds, but there are also several thick beds of clay. The basal 100 to 150 feet of the Magothy contains a greater proportion of coarse-grained material. This consists partly of coarse sand and gravel that contains pebbles as much as 2 or 3 inches in diameter. The voids are largely filled with silt and soft clay, however, and the coarse-grained beds are separated by beds of sandy clay. A zone immediately overlying the clay member of the Raritan contains relatively coarse-grained permeable material.

The Magothy formation typically contains several clay layers, some of them as much as 50 feet thick. Where the Magothy itself is thick, the aggregate thickness of the clay beds is nearly as great as that of the clay member of the Raritan. It is difficult or impossible to trace any of these clay beds from one well to the next, which suggests they are probably lenticular and individually of small extent. These clay beds probably do not constitute as effective a barrier to the movement of groundwater as the clay member of the Raritan formation (de Laguna, 1963).

Monmouth Greensand--Unconformably overlying the Magothy Formation is the Monmouth greensand. This unit is not present beneath the airport or to the north but is present 3,000 feet to the south. This unit extends southward and forms a wedgelike layer that thickens as it travels seaward and is approximately 50 feet thick beneath the barrier beach. The Monmouth greensand consists of interbedded marine deposits of dark-gray, olive-green, dark-greenish-gray, and greenish-black glauconitic and lignitic clay, silt, and clayey and silty sand. This layer has a low hydraulic conductivity and tends to confine the water of the underlying aquifer (Krulikas, 1986).

Gardiners Clay--An approximately 40-foot-thick clay bed lies above the Magothy Formation and below the glacial deposits below the airport. This clay is present at about 100 feet below msl at the airport and extends southward where it overlaps the Monmouth greensand. The Gardiners clay pinches out just north of the airport, but equivalent clay bodies can be found locally at various

locations on Long Island (Jensen and Soren, 1974). This unit is made up of green and gray clay, silt, and clayey and silty sand including some interbedded clayey and silty gravel. This layer as a whole has low hydraulic conductivity and tends to confine water in the underlying aquifer (Krulikas, 1986).

Glacial Deposits--These upper Pleistocene sediments are composed of glacial outwash deposits; lacustrine and marine deposits; and terminal, ground, and ablation-moraine till deposits. The sediments below the airport are mostly outwash deposits consisting of stratified fine to coarse sand and gravel of light- to dark-brown, tan, and yellowish-brown color. Approximately 100 to 120 feet of these sediments are found below the airport and above the underlying Gardiners clay (Jensen and Soren, 1974). Till deposits known as the Ronkonkoma Terminal Moraine are expressed as hills approximately two miles north of the airport. Lacustrine and marine deposits are usually thin and discontinuous and are found locally throughout Long Island.

The Pleistocene epoch is divided into four major glacial stages, the Nebraskan, Kansan, Illinoian, and Wisconsin. The youngest epoch, the Wisconsin, produced Long Island Sound and most of the topographic features of Suffolk County as it is known today.

During the earlier part of the Wisconsin stage, the ice sheet moved to about the middle of the county and stopped, leaving before it the central ridge or terminal moraine. This ice sheet was called the Ronkonkoma sheet, and the moraine, which runs the entire length of the county from the Nassau County line to Montauk Point, was given the same name. The glacier retreated from this point back to the north of Long Island and then readvanced. The last advance terminated along the north shore: again, a hilly terminal moraine was formed. This last advance of the ice was called the Harbor Hill sheet, and the moraine was called the Harbor Hill moraine.

After the two ice sheets reached their southern limits in the county, they began to melt. As they melted, meltwater streams flowed from the glaciers and carried a large volume of sand and gravel farther south. This sand and gravel was deposited in a more or less flat plain, developing what is known as an outwash plain. Two outwash plains are in the county, with the one between the Ronkonkoma moraine and the Atlantic Ocean being the one present below the airport (Warner, Jr., et al., 1975).

III.C HYDROLOGY

III.C. 1 Groundwater Hydrology

Three aquifers and two aquitards are present below the airport. Overlying the bedrock is the Lloyd Aquifer. The Lloyd Aquifer correlates to the Lloyd sand member of the Raritan Formation. Overlying the Lloyd is the Raritan clay member, an aquiclude, which is the upper member of the Raritan Formation. Overlying the Raritan clay is the Magothy aquifer, a water-bearing unit that correlates to the Magothy Formation. Overlying the Magothy is the Gardiners clay, an aquiclude present beneath and south of the airport. Overlying the Gardiners clay at the airport and overlying the Magothy north of the airport is the upper glacial aquifer, a predominately sand and gravel unit deposited during the Wisconsin glaciation. The general characteristics of each aquifer and aquitard including hydrologic properties are presented below. Table 3-3 presents the hydrologic properties of each unit.

Bedrock--This metamorphic unit is mostly plagioclase and quartz gneiss with no primary porosity. Some secondary porosity due to joints and fractures is present, which allows its use as a water source on western Long Island where bedrock is near surface and the overlying aquifers are absent (McClymonds and Franke, 1972). This unit has low hydraulic conductivity and is considered an aquiclude due to its texture and the highly weathered surface zone, which has become a greenish-white residual clay (Jensen and Soren, 1974).

Lloyd Aquifer--The Lloyd sand is one of the most important aquifers on Long Island largely because it yields adequate supplies of good quality water in areas, generally beneath the margins of Long Island, where supplies from overlying formations are inadequate or are contaminated by, or readily subject to, contamination by seawater. The Lloyd can supply water under these circumstances because it is overlain by the relatively impermeable and virtually continuous blanket of the clay member.

The usefulness of the aquifer is seriously compromised by the probability of poor yield. In the western part of the island, many wells tapping the Lloyd sand member yield 10 to 20 gallons per minute per foot (gpm/ft) of drawdown. A well at Brookhaven National Laboratory was finished with 25 feet of screen and had a yield of about 2 gpm/ft of drawdown (de Laguna, 1963).

TABLE 3-3

Hydrologic Properties of Formations Below Suffolk County Airport, Westhampton Beach, New York

Unit	Texture	Thickness (feet)	Hydraulic Conductivity[a] (gpd/ft^2)[b]	Estimated Transmissivity[a] (gpd/ft)[c]
Upper Glacial	Sand and gravel	120	2,000	200
Gardiners Clay	Clay and silt	40	Aquitard	Aquitard
Magothy Fm.	Sand, clayey sand	930	380	300
Raritan Clay	Clay and silt	200	Aquitard	Aquitard
Lloyd Sand	Sand and gravel	400	300	75
Bedrock	Granitic gneiss	--	Aquiclude	Aquiclude

[a] Data from McClymonds and Franke, 1972.

[b] Gallon per day per square foot = 4.7×10^{-5} cm/s.

[c] Gallon per day per foot = 1.5×10^{-3} cm^2/s.

The hydraulic conductivity of the Lloyd at the airport was estimated (McClymonds and Franke, 1972) to be 2,000 gallons per day per square foot (gpd/ft^2) (1.4×10^{-2} cm/s), and transmissivity was estimated as 75 gpd/ft (1.1×10^{-1} cm^2/s).

The Lloyd aquifer as of 1974 was not used as a water source at or near the Suffolk County Airport (Jensen and Soren, 1974). In 1982, 0.19 million gallons per day (mgd) was taken from the Lloyd (Krulikas, 1986) in the east central area of Long Island.

Raritan Clay--The Raritan Clay member of the Raritan Formation is considered an aquitard separating the underlying Lloyd Aquifer from the overlying Magothy Aquifer. Thickness below the airport is approximately 200 feet. The hydraulic conductivity of a clay similar to the Raritan was determined to be 0.2 gpd/ft^2 (9.3×10^{-6} cm/s), which is several orders of magnitude less than either the Lloyd or Magothy aquifers, indicating that mixing of waters is quite small (de Laguna, 1963).

Magothy Aquifer--Although it consists in part of beds of dense clay and layers of coarse sand and gravel, by far the greater part of the Magothy formation is made up of sandy clay and clayey sand. The formation as a whole, because of its thickness, can transmit and store large amounts of groundwater. There are no effective barriers to the movement of water through the formation except locally. Wells that are constructed and developed carefully generally yield large quantities of water from all but the most clayey parts of the formation. The Magothy is important as an alternate aquifer in the event that the water in the overlying upper Pleistocene deposits becomes contaminated.

The highly productive beds of the Magothy are not confined to the basal gravelly zone, but there is no other zone in which a reliable supply can be predicted. A well at Brookhaven National Laboratory penetrated considerable material in the Magothy from which water might be obtained. This well had only 20 feet of screen, no gravel pack, and little development but still yielded water at a specific capacity of 15 gpm/ft of drawdown (de Laguna, 1963).

Hydraulic conductivity of the Magothy below the airport was estimated to be 380 gpd/ft^2 (1.8×10^{-2} cm/s), and transmissivity was at least 300 gpd/ft (4.3×10^{-1} cm^2/s) with a saturated thickness of approximately 930 feet (McClymonds and

Franke, 1972). In 1982 1.02 mgd were removed from this aquifer in east Central Long Island. Below the airport, the top of the Magothy aquifer is about 150 feet below msl. The potentiometric surface of this aquifer is approximately 15 feet above msl (Jensen and Soren, 1974). This confined, artesian nature of the Magothy would cause an upward flow of water through the overlying Gardiners clay.

Gardiners Clay--This clay is poorly permeable and constitutes a confining layer for the underlying aquifer. Occasionally, some sand layers within the Gardiner may yield small quantities of water (McClymonds and Franke, 1972).

The effectiveness of the Gardiners clay as a barrier to groundwater movement is an important factor in determining whether contamination reaching the groundwater in the glacial sands would be carried down to the lower aquifer. The sandy zones in the clay, which as far as is known may occur anywhere, would offer relatively little restriction to the movement of water, which could then pass downward wherever the hydraulic gradient is favorable. Water can pass through the Gardiners clay, although at a slow rate, in small amounts and probably at most places only by circuitous routes.

Below the airport, the beds of clay and sand within the Gardiners are probably an effective barrier to the movement of groundwater into lower aquifers. The combination of low permeability with the generally upward movement of Magothy aquifer water would tend to keep near-surface contamination from migrating into the lower aquifer (de Laguna, 1963).

Upper Glacial Aquifer--This aquifer correlates to the saturated interval of the glacial outwash deposits of the Wisconsin glaciation. This water-bearing unit is an unconfined water table aquifer present directly below the airport. Depth to groundwater is approximately 30 feet but may be less or more due to topographic highs or lows.

The clean, coarse sand and gravel are very porous and highly permeable. They make a porous soil so that a high proportion of the rainfall infiltrates where it falls. There is virtually no surface runoff. Because of their high porosity, the deposits store large quantities of water. Because of their high permeability, the deposits yield large quantities of water to wells and are the source of nearly all the groundwater pumped in central Suffolk County.

There are no effective barriers to the movement of water anywhere in the unit, but there may be substantial variation in permeability over short distances.

Some of these minor variations in water-bearing characteristics might become significant in connection with possible movement of a contaminant. As the moraine deposits and outwash were deposited by water flowing in general from north to south, individual lenses of sand and gravel may themselves be elongated in this direction. Thus, there may be threads of material with relatively higher permeable material along which water might move a little more rapidly under proper hydraulic conditions (de Laguna, 1963).

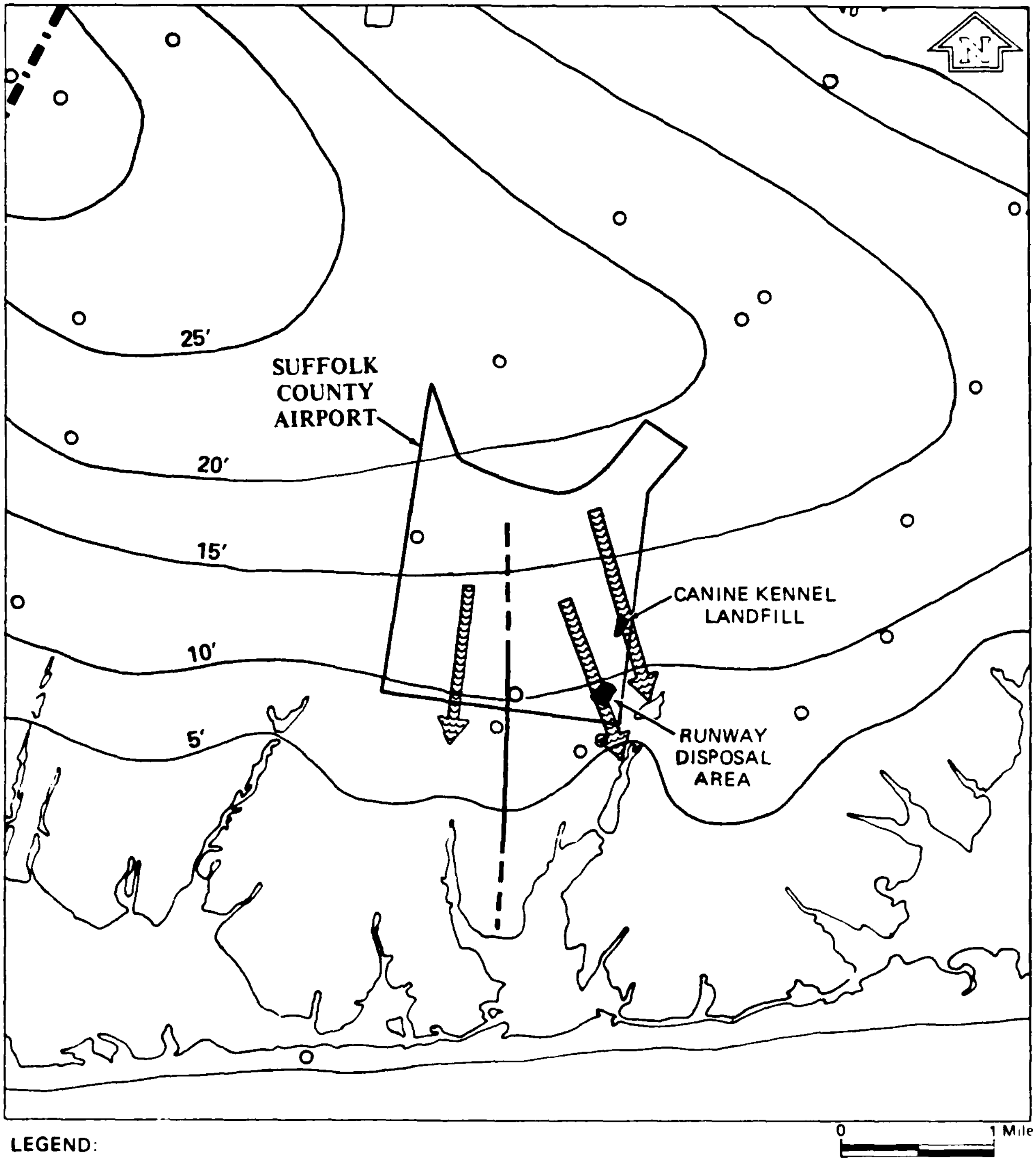
Hydraulic conductivity of the outwash was estimated to be about 2,000 gpd/ft^2 (9.4 x 10^{-2} cm/s), and transmissivity is approximately 200 gpd/ft (2.9 x 10^{-1} cm^2/s) (McClymonds and Franke, 1972). Flow direction of the water at the two areas of investigation would be to the southeast, towards the headwater area of Quantuck Creek, where near-surface water would probably discharge (Figure 3-4).

The upward movement of water from the Magothy Aquifer would cause the upper glacial aquifer water to flow horizontally toward surface-water discharge points. Migration of contaminants downward into lower aquifers is very unlikely.

III.C.2 Surface-water Hydrology

The topography of the SCA area is such that surfacewater runoff flows in a southerly and southeasterly direction. Runoff from the airport mainly percolates into the soil and moves in the subsurface aquifers although some may move as sheet flow. The western portion of the airport drains to Aspatuck Creek while the eastern portion flows to Quantuck Creek. Both of these creeks flow into Quantuck Bay, which is separated from the Atlantic Ocean by a narrow barrier island (Figure 2-1). Quantuck Creek is dammed just north of the Long Island Railroad tracks, separating the system into southern tidal and northern non-tidal portions; the dam forms Old Ice Pond. Farther upstream on Quantuck Creek another dam forms North Pond.

The headwaters of Aspatuck Creek originate at SCAFB. However, on base, this drainage is intermittent and, therefore, supports little or no aquatic life.



LEGEND:

- Monitoring Well
- 10' Groundwater Elevation Contour
- Flow Direction
- Groundwater Divide
- Site Location

SOURCE: SCDHS, 1985.

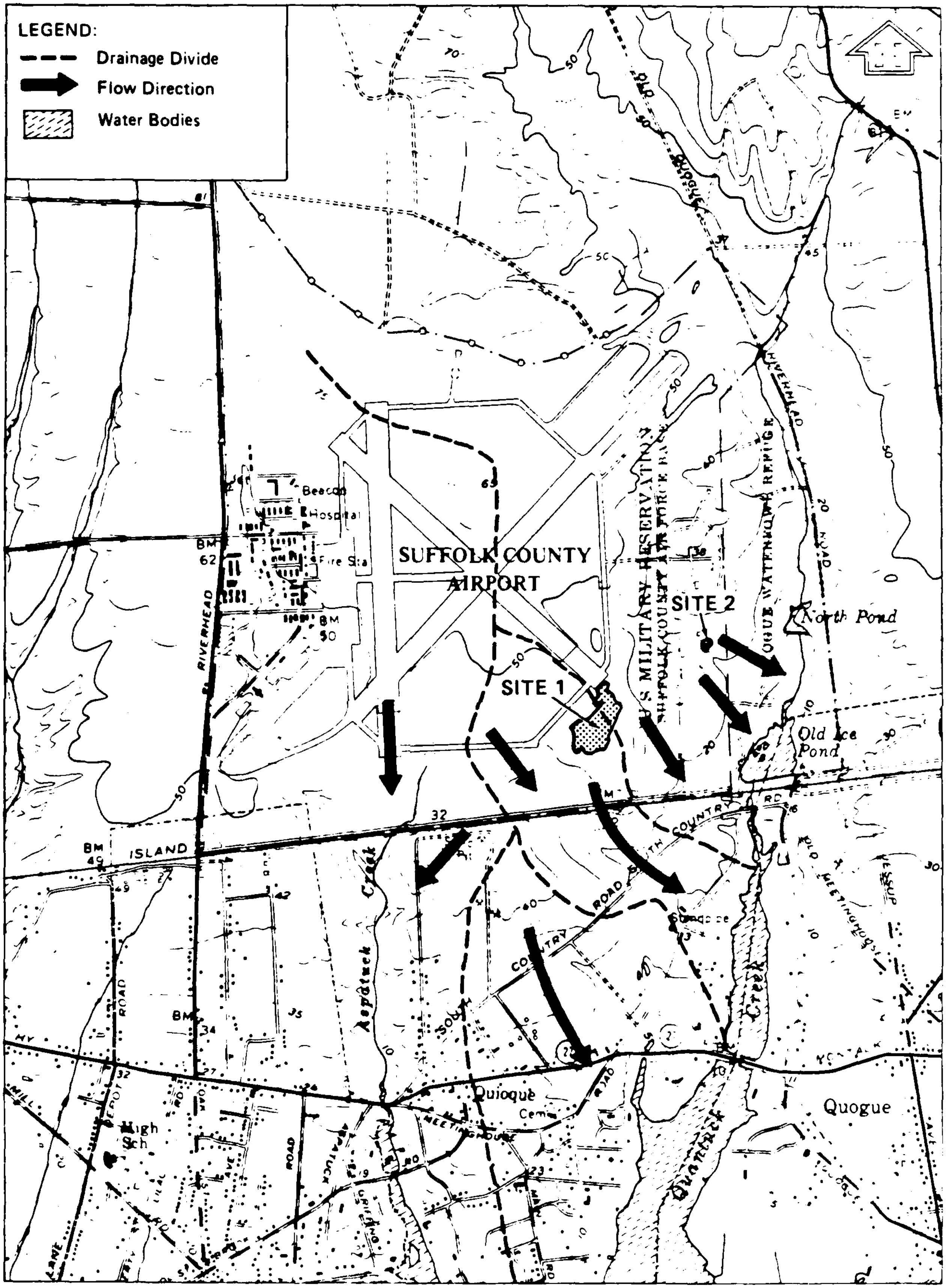
INSTALLATION ASSESSMENT SUFFOLK COUNTY AIRPORT Westhampton Beach, New York	FIGURE 3-4 GROUNDWATER CONTOURS

Site 1, Runway Disposal Area, and Site 2, Canine Kennel Landfill, are both located in the Quantuck Creek drainage basin. The flow from Site 1 is into the upper tidal portion of Quantuck Creek; surface drainage from Site 2 flows into the section downstream of North Pond but upstream of the Old Ice Pond dam (Figure 3-5).

III.D WATER QUALITY

The water quality of the surficial aquifer in the vicinity of SCA is generally very good. It is estimated that 100% of the groundwater used in the area is from the surficial aquifer (Jensen and Soren, 1974). Typical water quality for this aquifer is reported by de Laguna (1964) and Franke and McClymonds (1972). A Suffolk County Water Authority (SCWA) groundwater pumping center consisting of 2 wells is situated 1,500 feet south of the airport. Water quality data supplied by SCWA for samples collected on October 8, 1985, at this location are summarized on Table 3-4. The data consist of inorganic chemical analyses results for the two SCWA wells. Organic chemical analyses were also performed at the same time, but no organic chemicals were detected. The complete list of analytes and their concentrations is presented in Appendix D.

In March 1982 wells were installed at three locations downgradient of Site 1, Runway Disposal Area, and water from five different depths was sampled and analyzed at each well location. Seven volatile compounds were detected in some of the water samples. Only the presence of these compounds (carbon disulfide, methylcyclopentane, pentane, 3-methylpentane, hexane, 2-methyl-3-pentanone, 2,4-dimethyl-3-pentanone) was confirmed; no concentrations were reported. Thirty other volatile compounds were analyzed for but not found (Appendix D). Approximately 1,500 feet directly upgradient of Site 1, Runway Disposal Area, is a FTA burn pit that is currently under investigation. The AF installed monitoring wells around the FTA upgradient of Site 1, Runway Disposal Area, in 1982. Groundwater samples from these wells showed hydrocarbons and halogenated organic compounds in concentrations above the detection limits (USAF, 1982). The hydrocarbons were identified as oil and grease, heating oil or similar fuel, and either JP-4 or Jet A. The following eight halogenated organics were found: chloroform, methylene chloride, 1,1,2,2-tetrachloroethylene, 1,1,1-trichloroethane, trichloroethylene, 1,2-dichloroethylene, trans-1,2-dichloroethane, and chlorobenzene. Appendix D contains analytical results for samples collected from FTA wells, designated as well numbers 09, 10, 11, 12, 14, 22, 23, and 24.



INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach, New York

FIGURE 3-5
SURFACE WATER DRAINAGE

0 2000
Scale in Feet

Reference U S G S Topos 7½' series
Eastport, N.Y., 1956 Quogue N.Y., 1956

TABLE 3-4

Water Quality Data for the Surficial Aquifer, Suffolk County, New York

Constituent	SCWA Well No. S-64716	SCWA Well No. S-20688
Iron (mg/l)	<0.03	<0.03
Manganese (mg/l)	0.02	0.05
Sodium (mg/l)	5.3	5.2
Potassium (mg/l)	0.74	0.70
Calcium (mg/l)	13.4	4.8
Magnesium (mg/l)	2.05	2.01
Sulfates (mg/l)	14.7	11.2
Nitrite (mg/l)	<0.01	0.01
Nitrate (mg/l)	0.15	1.08
Chloride (mg/l)	7.0	6.0
Total dissolved solids (mg/l)	73	51
Specific conductance (umho/cm)	114	71
pH	6.5	6.0

SOURCE: SCWA, 1986.

Groundwater downgradient of the POL area located approximately 2,500 feet west of Site 1 has been sampled and analyzed at several locations (New York Testing Laboratories, Inc., 1982). One sample contained detectable concentrations of 11 volatile compounds (acetone, 2-propanol, tetrahydrofuran, 2-butanone, cyclohexane, methylcyclopentane, 2,3-dimethylbutane, hexane, methylcyclohexane, heptane, and 2-methylhexane), but actual concentrations were not determined (Appendix D).

No site-specific water quality data have been collected for Site 2, Canine Kennel Landfill.

III.E WATER USE

III.E.1 Groundwater Use

Groundwater is the only source of water supply for Nassau and Suffolk Counties. A majority of the water in the SCA area is obtained from the upper glacial (water-table) aquifer; the rest is obtained from the Magothy and Lloyd (deep) aquifers. At present, SCWA supplies the majority of the water in the area; the rest is supplied by several smaller companies.

Total public water-supply withdrawal in the area in 1982 is estimated to have been 9.09 mgd. In 1982, 7.9 mgd were withdrawn from the upper glacial aquifer; 1.0 mgd were withdrawn from the Magothy aquifer, and 0.2 mgd from the Lloyd aquifer.

Groundwater is also used for irrigation. Pumpage for farm and golf course irrigation is unknown but is estimated to be less than 0.5 mgd, solely from the upper glacial aquifer.

The upper glacial and Magothy aquifers are capable of producing considerably more water than is currently being withdrawn; use of the Lloyd aquifer is legally restricted. The upper glacial aquifer is the most readily available source, but if it should prove inadequate for a particular need, wells could be drilled to the underlying Magothy. Withdrawal from the Lloyd aquifer is restricted by New York State legislation to the south-shore barrier islands and to other areas with specific supply problems. Brookhaven National Laboratory is one agency that has permission to pump from the Lloyd aquifer.

The Central Suffolk County area contains 31 public-supply wells. The SCWA, which is the major public water supplier within the area, operates 15 wells in 6 well fields in this area (Krulikas, 1986).

III.E.2 Surface-water Use

Quantuck Creek has been assigned several use classifications by the New York State Department of Environmental Conservation. From its mouth to Route 27, the creek is classed as SA, tidal saltwater suitable for shellfishing for market purposes, fishing, and bathing. However, these waters presently do not meet the quality standards for this classification and are, therefore, closed to shellfishing for market purposes. The other activities occur on this reach.

From Route 27 to the Old Ice Pond dam, the creek is classed as SC, tidal saltwater suitable for fishing and fish propagation. The Old Ice Pond is Class C, suitable for fishing but not for bathing or as a water supply for drinking or food processing. The pond is within the Quogue Wildlife Refuge and is used mainly for the management and propagation of waterfowl and other water birds. Refuge regulations prohibit fishing. Quantuck Creek, upstream of the Old Ice Pond, is Class D or drainage. Its best uses are for agriculture, industrial cooling, process water supply, and fish propagation but not for fishing, bathing, drinking, or food processing. This reach is also on the Quogue Wildlife Refuge and is used as a natural feature for the management of wildlife.

III.F BIOLOGICAL FEATURES

III.F.1 Ecosystems

The SCA is located in the Long Island pine barrens, the second largest pine barrens vegetative assemblage in the world (Cryan, 1980). The pine barrens, which cover much of central Long Island, are characterized by open, sunlit, woodlands dominated by pitch pine (*Pinus rigida*). This overstory species is interspersed with white oak (*Quercus alba*) and scarlet oak (*Q. coccinea*). The upper shrub layer is composed almost completely of scrub oak (*Q. ilicifolia*); underneath is a low shrub layer of heaths (Ericaceae) generally consisting of black huckleberry (*Gaylussacia baccata*), early lowbush blueberry (*Vaccinium angustifolium*), late lowbush blueberry (*V. vacillans*), bearberry (*Arctostaphylos uva-ursi*), and wintergreen (*Gaultheria procumbens*) (Olsvig *et al*., 1979).

The pine barrens in the immediate area of the airport are particularly unique: they are characterized by a transition from 33- to 83-foot-tall pitch pines found throughout most of the Long Island pine barrens to a dwarf from 3- to 6-feet tall. This dwarf pitch pine forest, known as dwarf pine plains, covers 2,500 acres

and is one of five or fewer known to exist in the world (Cryan, 1982; New York Natural Heritage Program, 1986). The southern boundary of the core of the dwarf pine plains bisects the airport in an east-west direction, crossing the airport at the point where the northeast-southwest runway crosses the northwest-southeast runway (Figure 3-6). The eastern boundary of the core runs north-northwest along the eastern side of the Quogue Wildlife Refuge.

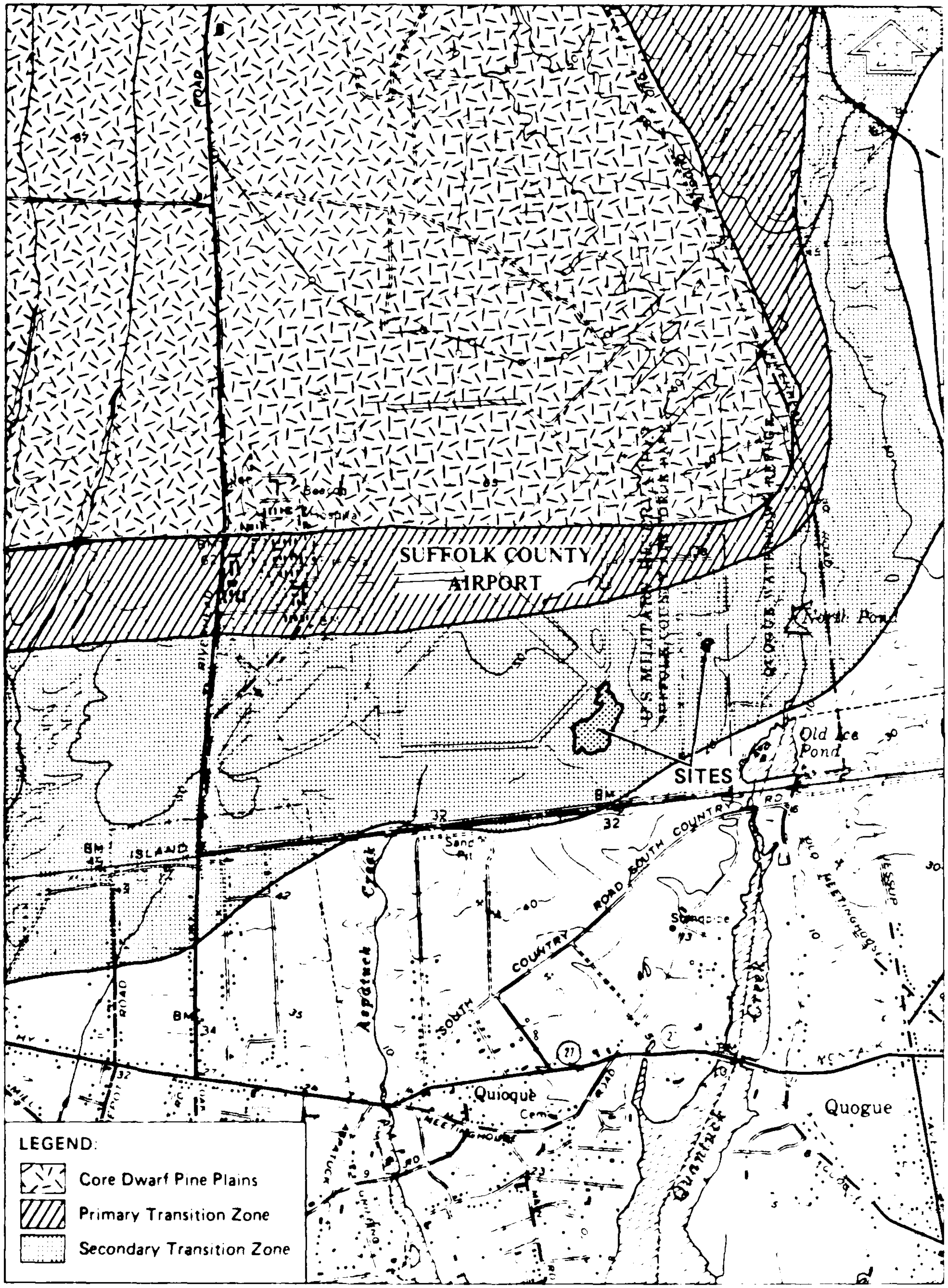
In the core dwarf pine plains, the dwarf pitch pine and scrub oak share dominance equally. About 50 percent each of the tall shrub layer (usually under 6 feet) is composed of the dwarf pitch pine and the scrub oak. Beneath the tall shrub layer is a low shrub layer composed almost exclusively of black huckleberry and early and late lowbush blueberry. Underneath this is a third shrub layer composed mostly of the ground-hugging heaths bearberry and wintergreen. Most areas of the dwarf pine plains contain only these seven woody species; they compose about 95 percent of the total biomass (Cryan, 1982; Olsvig et al., 1979).

Surrounding the core is a 100- to 500-yard-wide primary transition zone in which pitch pine heights increase rapidly from 3 to 6 feet to about 20 to 25 feet. Beyond this is a secondary transition zone of dwarfing in which the pitch pines are tree-sized but are relatively short (only 25 feet maximum) at maturity. This secondary zone ranges in width from less than 1 mile to the south and north to several miles to the east and about 8 miles to the west (Cryan, 1982).

The two transition zones are comprised of similar species as the core although the pitch pine is taller and forms an overstory with scattered white oaks. In the surrounding pine barrens, as described initially, the pitch pines are even taller and interspersed with both white and scarlet oak.

There are many other plant species found within the vicinity of the SCA. Appendix D contains a 1971 vegetation species list for the Quogue Wildlife Refuge, which borders the airport on the eastern side (Figure 3-6).

Site 1, Runway Disposal Area, and Site 2, Canine Kennel Landfill, are located within the secondary transition dwarf pitch pine plains. Although the sites themselves have very little woody vegetation, they are surrounded by wooded areas dominated by 25-foot-tall pitch pines in the overstory and scrub oak in the upper shrub layer. There are few oaks scattered in the overstory surrounding Site 2, Canine Kennel Landfill, but more are present at Site 1, Runway Disposal Area, especially on the southern side.



INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach,
New York

FIGURE 3-6
VEGETATION IN VICINITY OF
SUFFOLK COUNTY AIRPORT

0 2000
Scale in Feet

Reference U.S.G.S. Topos 7½' series
Eastport, N.Y. 1956 Quogue, N.Y. 1956

The actual sites have been severely disturbed. As a result they support mainly herbaceous grasses. At both sites, 2- to 10-foot pitch pines are scattered throughout. The heights are indicative of their relatively young age rather than severe dwarfing. On the western side of Site 1, Runway Disposal Area, extensive groupings of bearberry are growing along the ground, which is a further indication of disturbance (Olvig et al., 1979).

As with the plants, there are many species of animals that reach maximum abundances or have their only Long Island populations in the Long Island Dwarf Pine Plains. Birds are the most apparent wildlife in the area. The neighboring Quoque Wildlife Refuge has recorded 157 bird species, many of which would also be seen in the vicinity of the two study sites (Appendix D). Common species include the herring and ring-billed gull, mourning dove, tree swallow, chimney swift, purple martin, blue jay, black-capped chickadee, catbird, brown thrasher, robin, house sparrow, starling, grackle, and cowbird (NYDEC, n.d.).

Relatively few mammals inhabit the plains because of the extreme conditions. Among the most common are the white-tailed deer and red fox. Smaller mammals, including the meadow vole, pine vole, deer mouse, white-footed mouse, woodland jumping mouse, masked shrew, and eastern mole, inhabit the ground and subterranean levels. Similarly, few reptiles and amphibians exist or can regularly be found on the pine plains. Only two amphibians, Fowlers toad and lead-backed salamander, have been recorded. Several snakes, including the smooth green snake and the hognose snake, are ocassionally found (Cryan, 1982).

The insects are particularly important in the dwarf pine plains because several hundred species have been recorded in only this habitat type; hundreds more are endemic to the pine barrens with their greatest densities recorded in the dwarf pine plains. The butterfly and moth fauna include most of the coastal plain and pine barren species found elsewhere on Long Island, as well as some very localized ones and others that are declining in numbers. The buck moth (Hemileuca maia) is one of the most visible and abundant animal species in the dwarf pine plains. This rare and localized species is endemic to pine barrens, but its population in the dwarf pine plains is the densest one known (Cryan, 1982).

Because of the paucity of pine barrens vegetation at the two study sites, it is unlikely that many of these animal species reside there. However, they may pass

through while moving from one wooded area to another or while feeding. During the site reconnaissance in August 1986, deer tracks and scat were observed at both sites, as were a turtle and several bird species, including robins, blue jays, mockingbirds, and herring gulls.

III.F.2 Rare, Threatened, and Endangered Species

There are no state or federally designated threatened or endangered species that have been identified at the SCA. However, the northern harrier (Circus cyaneus), listed as threatened in New York State, has been known to nest in the pine barrens within 1 mile of the airport since 1974, and the osprey (Pandion haliaetus), also listed as threatened in New York State, has been known to have nested at four locations within a 3-mile radius of the airport annually from 1978 to 1983 (NYDEC, 1986). In addition, the rare dwarf pine barrens community, as described in Section III.F.1, is critically imperiled on a global basis with five or fewer known sites worldwide. This assemblage is the only site in the State of New York. The dwarf pine barrens habitat supports the barrens buck moth (Hemileuca maia), a New York State Special Concern species; and the prairie warbler (Dendroica discolor), considered significant wildlife for this community (New York Natural Heritage Program, 1986). The upland sandpiper (Bartramia longicavda), listed under the "special concern" category in New York State, utilizes habitat on the SCA property (NYDEC, 1986).

The neighboring Quogue Wildlife Refuge supports three vascular plant species that are globally secure but occur in limited numbers in New York State. Nuttall's lobelia (Lobelia nuttallii) is imperiled in the state with fewer than 20 known occurrences. Button sedge (Carex bullata) is critically imperiled with only three known extant populations. Zigzag blatterwort (Utricularia subulata) is rare in the state with fewer than 100 known occurrences. None of these plant species has legal protection. The refuge is also an unconfirmed site for the eastern mud turtle (Kinosternon subrubrum subrubrum), a New York State threatened species (New York Natural Heritage Program, 1986).

Both the Quogue Wildlife Refuge and Quantuck Creek from Montauk Highway (Route 27) to the Old Ice Pond are under public review for protection as a Coastal Zone Management Significant Habitat (New York Natural Heritage Program, 1986).

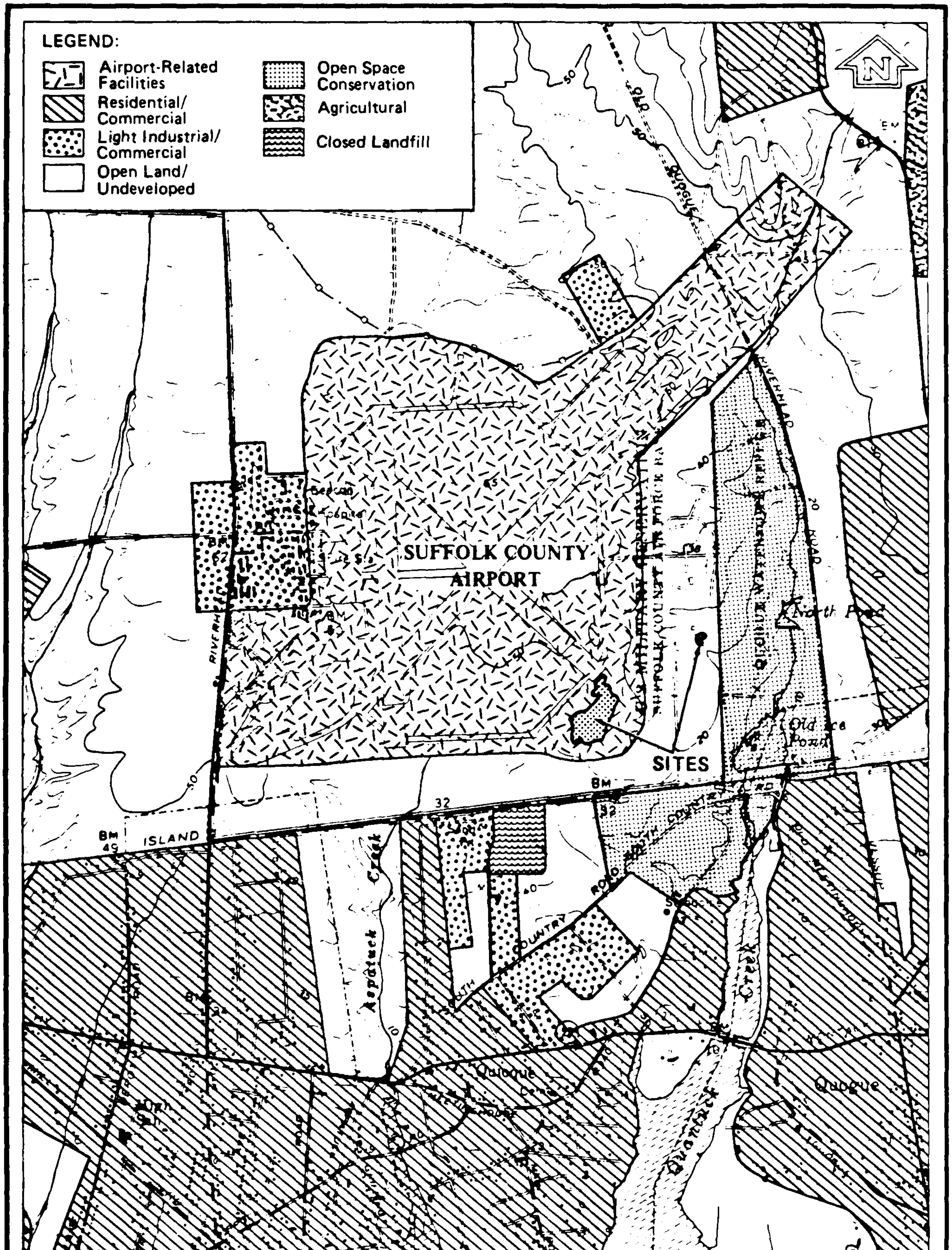
III.G ADJACENT LAND USE

The SCA, although owned by Suffolk County, is almost wholly surrounded by the Town of Southampton. The incorporated Village of Westhampton Beach contains the southwest corner of the airport and extends south from that corner to the Atlantic Ocean. The incorporated Village of Quogue extends south and east from the southeast corner of the airport.

Much of the airport property is composed of landing strips, taxiways, and overrun areas (Figure 3-7). The developed portion is occupied by the New York ANG, the SCA, and small commercial establishments. The mission of ANG is aerospace rescue and recovery. Therefore, much of the use of the ANG area supports those activities and includes hangers, maintenance shops, a fire department, and offices. The SCA serves mainly light aircraft and gliders. This area contains a control tower, restaurant, parking area for planes, and aviation-related businesses. Located throughout the former base, but concentrated in the main, developed portion, are various small businesses. They occupy buildings that were originally constructed as part of SCAFB. These tenants include storage companies, automobile service shops, and home improvement and construction companies. The remainder of the airport is undeveloped pine barrens.

The land north of the base is predominantly undeveloped pine barrens; however, it is zoned LI-200 (light industry in 200,000-square foot developments with individual lot sizes of 40,000 square feet minimum). To the east of the airport property, across Riverhead Road, the land is zoned primarily as CR-200 (country residence with minimum lot sizes of 200,000 square feet). This area is nearly all undeveloped pine barrens. Two exceptions are a tract immediately across Riverhead Road from the main entrance to the airport and a housing development further to the west. The former is zoned LI-40 (light industry in 40,000-square foot minimum developments with 20,000-square foot minimum individual lots) and is used for businesses, including a vocational training center. The area further to the west is zoned R-20 and R-40 (residential on 20,000- and 40,000-square foot minimum, respectively) and contains residential housing, including a subdivision for U.S. Coast Guard personnel.

Immediately to the southwest, in the Village of Westhampton Beach, the land is zoned as light industry and contains some small commercial establishments, a



INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach, New York

FIGURE 3-7
LAND USES OF SUFFOLK COUNTY AIRPORT AND VICINITY

0 2000
Scale in Feet

Reference: U.S.G.S. Topos. 7½ series, Eastport, N.Y., 1956; Quogue, N.Y., 1956

tennis club, and residences. Further to the south in Westhampton Beach, the area is zoned and contains a combination of commercial and 15,000-square foot minimum residential lots. Most of the remainder of Westhampton Beach is residential, zoned for 15,000- to 40,000-square foot lots with the exception of businesses (shops and offices) along some of the main thoroughfares and in the central business core.

Along the southern side of the base, the lands are zoned CR-40 (country residence, minimum lot size 40,000 square feet), R-20, and R-40; country residential zoning requires a larger minimum house size than residential zoning. Over half this area is undeveloped woodland, in particular the land surrounding Aspatuck Creek. The remainder includes one residential area, an automobile salvage yard, a closed town landfill, a town maintenance yard, and a sand and gravel quarry that is used as a dumping area.

The eastern third of the southern side of the airport and the southern half of the eastern side are zoned as Open Space Conservation (OSC). The former area contains two water supply wells and a water tank for the SCWA and is considered to be a recharge area. The latter area is the Quogue Wildlife Refuge, a 200-acre wildlife management area operated by the New York State Department of Environmental Conservation (NYDEC).

To the southeast of these open space areas are Quantuck Creek and the Village of Quogue. Most of Quogue is residential in character and zoned as such for lots of 20,000 to 87,000 square feet. North of the Long Island Railroad tracks in Quogue, the area is zoned light industry and contains wooded lots and an abandoned village landfill. To the west of the airport, the land in the Town of Southampton is zoned as CR-80 (country residence, 80,000-square foot minimum lots), CR-120 (country residence, 120,000-square foot minimum lots), CR-200, and R-20. Much of this area is undeveloped pine barrens although there is a large area presently being farmed and several scattered subdivisions.

III.H SUMMARY OF ENVIRONMENTAL FEATURES

SCA is located on a gently sloping glacial outwash plain. Elevations range from 10 feet msl in the southeast corner to 80 feet msl in the northeast corner with an overall slope of 0.5 percent. The climate is humid continental with a maritime influence. Precipitation is 44.5 inches annually although periods of

drought are not uncommon. Net precipitation is 14.5 inches per year and rainfall intensity (1 year, 24 hour) is 2.75 inches. Most precipitation percolates into the soil and moves in the subsurface aquifer. Any surface drainage at the two disposal sites would be toward Quantuck Creek, the nearest surface-water body, which is 2,000 to 3,000 feet east of the disposal areas. The reach of Quantuck Creek, which receives most of the drainage from Site 1 and Site 2, is in the Quogue Wildlife Refuge and is used for the management of wildlife.

The soils at the airport are of two associations, Riverhead-Plymouth-Carver and Plymouth-Carver. These soils are characterized by being deep, level to gently sloping, well to excessively drained, and moderately coarse to coarse and being sandy loam, loamy sand, or sand. The two disposal areas are in the Plymouth-Carver association.

Bedrock under the two disposal areas is approximately 1,600 feet below msl. Within this depth are three aquifers and two aquitards. Above the bedrock is the Raritan formation that consists of the Lloyd sand member and the clay member. The 300-foot-thick Lloyd sand member is composed of sand and gravel with some silt and clay. It is an important aquifer for water supply, especially along the margins of Long Island and in areas where upper aquifers are contaminated. The clay member is 200 feet thick and separates the Lloyd aquifer from the Magothy aquifer.

The Magothy formation is 930 feet thick and consists of continental deposits of sand, sandy clay, clay, and some gravel. It is a highly productive aquifer and is an alternative water supply to the upper glacial aquifer. Overlying the Magothy is the Gardiners clay, a 40-foot clay layer that confines the underlying aquifer. Water can pass through this formation but only slowly and circuitously.

The upper glacial deposits are 100 to 120 feet thick and are composed of fine to coarse sand and gravel. This unconfined water table aquifer is very porous, highly permeable, and very productive. It is the main source of drinking water in the area surrounding the airport, supplying both domestic and municipal wells. In fact, two Suffolk County municipal wells are located approximately 1,500 feet south of Site 1, Runway Disposal Area. Depth to groundwater in the vicinity ranges from 4.5 to 37.0 feet.

The airport is within the Long Island pine barrens vegetative association, the second largest pine barrens in the world. It is dominated by pitch pines

interspersed with white oak and scarlet oak and an upper shrub layer of scrub oak and a lower shrub layer of heaths. The northern portion of SCA is in a unique vegetative assemblage known as a dwarf pine plain, which is one of five or fewer in the world. The habitat is dominated equally by 3- to 6-foot-tall pitch pines and scrub oak. The two disposal areas are within a secondary transition dwarf pitch pine plain containing 25-foot-tall pitch pines with scrub oaks in the understory. The sites themselves are disturbed and are populated mainly by grasses and scattered young pitch pines.

There are no federally or state-designated threatened or endangered species at the airport. However, the surrounding dwarf pitch pine plains support several unusual and rare species. The state-designated threatened northern harrier and osprey have nests within 1 and 3 miles, respectively, of the airport.

The SCA provides service for light aircraft and gliders. Several small businesses and aviation-related industries occupy the former SCAFB buildings. In addition, the New York State ANG uses 70 acres for aerospace rescue and recovery activities. Much of the land surrounding the airport, especially to the north, east, and west is undeveloped pine barrens. To the north the area is zoned light industry; to the west and east it is zoned residential. To the south is the Village of Westhampton Beach, and the land is zoned commercial and residential. To the southeast, the boundary that is closest to the two disposal sites, the land is zoned OSC and is used for two municipal water supply wells and a water tank for the SCWA and the Quogue Wildlife Refuge. The wells are within 1,500 feet of Site 1, Runway Disposal Area, and the refuge is within 200 feet of Site 2, Canine Kennel Landfill.

IV. FINDINGS

IV.A PAST ACTIVITY REVIEW

A review of base records and interviews with former SCAFB personnel resulted in identification of operations that resulted in the generation, handling, and disposal of base wastes. Because Site 1, Runway Disposal Area, was used after SCAFB personnel vacated the base in 1970, pertinent information concerning waste disposal by ANGB and SCA is also included. Table 4-1 summarizes the major types of wastes generated by SCAFB, ANGB, and the SCA. Treatment, storage, and/or disposal practices associated with each waste type are also identified. Investigation of all waste generation, handling, and disposal practices associated with the former SCAFB was necessary for identifying those waste disposal practices specific to the two sites evaluated in this report.

IV.A.1 Waste Generation, Handling, and Disposal

For purposes of discussion, waste generation, handling, and disposal practices have been divided into three periods that include (1) Active Phase - SCAFB operation from 1951 to December 1969, (2) Deactivation Phase - SCAFB shutdown from December 1969 to July 1970, and (3) Post AF activity - July 1970 to present. Discussion for these three periods is provided in Sections IV.A.1.a, IV.A.1.b, and IV.A.1.c.

IV.A.1.a Active Phase (1951 to 1969)

Prior to its official deactivation on December 8, 1969, the AFB in Westhampton Beach, Suffolk County, New York, generated types and quantities of wastes typical of AF installations in operation during that time period. These wastes included mess hall garbage, trash and general refuse, waste POL, waste solvents, POL tank bottoms, paint wastes, explosive ordnance disposal (EOD) wastes, nondestructive inspection (NDI) and photography lab chemical wastes, runway reconstruction concrete, coal ash, and other inert debris. A listing of the various wastes generated at SCAFB prior to deactivation and the disposal method used for each of these wastes are presented in Table 4-1. For discussion purposes, the wastes have been divided into four categories:

TABLE 4-1
SUMMARY OF WASTE DISPOSAL PRACTICES
SUFFOLK COUNTY AIRPORT, WESTHAMPTON BEACH, NEW YORK

Operation/Activity	Waste Types	Method of Treatment/Storage/Disposal[12] 1951 – 1960 – 1969	1971 – 1980 – 1986
Suffolk County Air Force Base	Garbage/general refuse[1]	Off-base Disposal →	
	Construction debris[2]	On-base burning/Off-base disposal →	
	Bulk waste POLs[2]	Burned @ FTA →	
	Drummed waste POLs[3]	Stored on airfield (to 1969)	o One-time burn
	Paint Shop waste liquids[4]	Burned @ FTA →	
	Paint Shop waste solids[5]	Off-base disposal →	
	Shop wastes (rags, filters, parts)	Off-base disposal →	
	Vehicle and aircraft maintenance wastes: flammable liquids	Burned @ FTA →	
	nonflammable solids	Off-base disposal →	
	Runway rubble (concrete)	Site 1 →	
	Coal ash[6]	Used for Roads	
	Laboratory wastes (NDI and Photo)	Waste water system (cesspool) →	
	EOD wastes	Destruction @ EOD site →	
	Herbicide/pesticide containers	Off-base disposal →	
	Electrical Shop (transformers, wires)	Off-base for recycle or disposal →	
	Aircraft defuel	Recycled to POL →	
	Cesspool bottoms	Off-base disposal →	
	Furniture and equipment[7]		o Site 2
Air National Guard	Garbage/general refuse[8]		Off-base disposal →
	Construction debris[9]		Off-base disposal →
			Site 1 →
	Waste POLs[10]		Contract → DRMO
	Paint wastes/solvents[11]		Contract → DRMO
	JP-4		Contract → DRMO Burned @ FTA
	TCE		Contract discontinued use

TABLE 4-1 (continued)
SUMMARY OF WASTE DISPOSAL PRACTICES
SUFFOLK COUNTY AIRPORT, WESTHAMPTON BEACH, NEW YORK

Operation/Activity	Waste Types	Method of Treatment/Storage/Disposal[12] 1951 – 1960 – 1969 – 1971 – 1980 – 1986
Suffolk County Airport and Lessees	Garbage/general refuse	1971 → Off SCA property → 1986
	Construction debris	1971 → Off SCA property/Site 1 → 1986
	Waste POLs	1971 → Off SCA property → 1986
	Paint waste solids[13]	1971 → Off SCA property/Site 1 → 1986
Unauthorized Disposal	Construction debris	1971 → Site 1 → 1986
	Scrap metal	1971 → Site 1 → 1986
	Miscellaneous trash[14]	1971 → Site 1 → 1986

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[1]Recyclable wastes - including waste cardboard, scrap metal, and obsolete or expired shelf-life items - were disposed of by DPDO.
[2]Wastes pumped from waste storage tanks.
[3]Consisted primarily of waste POLs from Montauk Radar Site.
[4]Included paint thinners, strippers, or solvents *not left at painting sites*.
[5]Included paint solids, spray booth filters, cans, paint brushes, and rags.
[6]This practice was discontinued when conversion to natural gas occurred.
[7]Included desks, chairs, filing cabinets, typewriters, refrigerators, and miscellaneous metal parts.
[8]Recyclable wastes - including waste cardboard, scrap metal, and obsolete or expired shelf-life items - were shipped off-base.
[9]Nonroutine disposal of wastes occurred at Site 1.
[10]Included recovered products, engine oil, hydraulic oil, and synthetic turbine oil.
[11]Included paints, strippers (MEK, MIK), thinners, and PD-680.
[12]See Appendix H for definition of acronyms/abbreviations.
[13]Paint waste solids include paint cans, rags, brushes, and rollers.
[14]Includes all other items identified at the site with unknown source (See Table 4-2).

- Mess hall garbage and general refuse
- Waste POLs and flammable shop wastes
- Inert building/construction debris and
- Lab chemical wastes, explosives, and special waste materials.

During its nearly 20 years of operation, SCAFB produced both biodegradable and inert trash that would fit into the first classification described above, although the quantities of such materials would have varied with the level of activity on the base. Garbage and refuse from the buildings on the installation were put into dumpsters located on the outside parking areas. The types of material that were disposed of in the dumpsters included biodegradable mess hall garbage, waste paper, boxes, cleaning materials (rags, empty cans, and floor sweeping compounds), empty cans and bottles, and other general trash. Because no incinerator for waste papers operated on the base, a large percentage of the bulk refuse was most likely waste boxes and cardboard.

The wastes that were deposited in the dumpsters were picked up by personnel from the Roads and Grounds Department, which reportedly operated several refuse hauling vehicles. The collected wastes were then transported off-base to the Southampton Town Landfill (Figure 3-7). It is reported that during the base's most active periods (Korean and Southeast Asian conflicts), a privately contracted waste hauler also picked up refuse from the base. This waste would also have been transported off-base, probably to the town landfill.

Waste oils, solvents including, but not necessarily limited to, kerosene, mineral spirits, trichloroethylene, methyl ethyl ketone (MEK), and toluene , and contaminated fuels from the base were typically placed in temporary storage tanks located outside the hangers and shops. Approximately twice a month, these wastes were collected and burned at a FTA as part of a firefighters' training exercise. The area formerly used for fire training is located adjacent to a taxiway pod on the western portion of the base (Figure 2-3). During the last 5 years of operation by SCAFB, the amount of POL material disposed of in this manner reportedly averaged 200 to 300 gallons per week. Prior to this period, volumes would have fluctuated with the level of base activity. Base operations that would have contributed to this volume of flammable liquid wastes primarily included aircraft maintenance, vehicle maintenance, the paint shop, corrosion control, aircraft fueling, and POL storage. Nonliquid, flammable wastes, such as oily rags and

filters, empty containers once holding flammable liquids, and spill cleanup materials, were reported to have been disposed of in the dumpsters with the general trash and transported off-base as described above.

Drummed waste POLs from the Montauk Radar site, a separate AF facility located in Montauk, were reportedly transported to SCAFB during the mid-to-late 1960s for application onto the base grounds for weed control. This operation was never undertaken, and the drums were stored on an east side taxi-way of the airfield (Figure 2-2) until the base was shut down (see discussion on deactivation phase). An estimated 50 to 100 drums of waste POLs were reportedly transported and stored at this location. It is reported that waste fuels and oils were not routinely used on the grounds of the base for dust suppression or weed control. It is likely that unknown small quantities of waste POLs from various base shops were disposed of in the base's sewer/cesspool systems.

Inert building and construction debris generated at SCAFB resulted from two specific activities, the construction and repair of buildings and the reconstruction of the airfield's runways. Waste materials associated with the construction of buildings on the base were likely either burned on-site, deposited in one of the facilities dumpsters, or transported off-base by the building contractor. No building construction debris was known to have been routinely disposed of on-base during the active period of SCAFB.

Concrete rubble from reconstruction of the runways at SCAFB was deposited in large quantities at the southeastern end of the northwest-southeast runway (Runway 33) between the mid-1950s and 1969. This debris was disposed of on the ground surface within this area to serve as a foundation material for future runway extension to the southeast. This extension was never undertaken. The material consisted entirely of 6- to 12-inch-thick pieces of broken-up concrete taken from the existing runways. As one of the sites of concern at the SCA, this disposal area and the practices associated with its use are described in greater detail in Section IV.A.2.

The last group of waste generated and disposed of by SCAFB during its years of operation includes laboratory wastes, hospital and health service wastes, explosive wastes, and other special treatment wastes. At least two laboratories operated on the base during the 1960s--a photographic lab and an NDI

lab. Liquid wastes from these facilities were typically disposed of in the base's cesspool system. The cesspool to which the NDI lab's waste was discharged was reportedly lined with lime in order to neutralize any acids flushed to the pit. Preliminary investigations concerning contaminant migration were conducted in this area. Solid wastes from these operations were collected and deposited off-base with the general refuse.

The Base Hospital, which opened in the mid-to-late 1960s west of Old Riverhead Road, can be assumed to have disposed of its wastes in the same manner as the rest of the base, although a private contractor may have handled its refuse contract because of its location off the main base. The hospital did not have an incinerator. Liquid wastes from the hospital were disposed of in the building's cesspool system, combined with other base wastes, or transported off base property.

Surplus explosives and any explosive waste materials that accumulated at SCAFB were handled by the base EOD personnel. At least during the last few years of the base's operation, EOD destroyed collected explosive wastes approximately every 6 months. Destruction of EOD wastes took place in a designated EOD area, north of the airfield runways.

IV.A.1.b Deactivation Phase (November 1969 to July 1970)

During the deactivation phase of SCAFB, additional wastes associated with the shutdown were reportedly either shipped off-base to the Town Landfill or burned as part of a one-time bonfire disposal operation. In addition, items collected from building clean-out operations (desks, chairs, typewriters, bookcases, filing cabinets, foot lockers, etc.) with potential reuse were sold or redistributed to other military installations or outside agencies or were buried in a sand pit (Site 2, Canine Kennel Landfill; Section IV.A.2) adjacent to the DRMO area. Additional technical support materials, such as radar instruments and lab instruments and chemicals, were reportedly shipped off-base to other military facilities.

As the buildings on the base were cleaned out during the deactivation process, salvageable materials were sent through DRMO for resale or redistribution. Any materials that remained at the DRMO area in March 1970 were then buried in a bulldozer-dug pit located adjacent to DRMO (Site 2, Canine Kennel Landfill). Only inert materials were reportedly deposited in this area. Section IV.A.2 describes the area and the activities surrounding its operation in greater detail.

Sometime before the burial operation at DRMO, all remaining waste oils, solvents, paints, rags, pallets, railroad ties, and other flammable items (solid and liquids) were disposed of in a single-burn disposal operation that reportedly took place adjacent to a runway pod off of the eastside taxiway. All flammable wastes remaining on the base after the official closing date in December 1969 were reportedly consumed in the one-time burning operation. The drummed waste POLs from the Montauk Radar site that had been stored on the runway pad were disposed of during the one-time burn operation.

All other wastes associated with the shutdown and deactivation of the base were reported to have been transported off-base to the Southampton Town Landfill. Waste materials in this group would have included garbage, scrap metal, and general refuse. No general refuse associated with the base's deactivation is reported to have been disposed of at either of the disposal areas being investigated in this report.

IV.A.1.c Post-Air Force Activity at SCAFB (1970 to Present)

Since 1970 when the airfield was officially turned over to Suffolk County, the area (formerly SCAFB) has undergone a number of structural changes with the potential to create the types of wastes observed at Site 1, Runway Disposal Area. These activities have included demolition of former SCAFB facilities, refurbishing of older buildings, and construction of new buildings within the area. In addition, many of the former base's buildings have been leased from the county and are occupied by private enterprises. This has substantially increased access to the former base and to the disposal areas.

The use of waste POLs and other flammable liquids (as identified on Table 4-1) for fire training at the airfield ended in 1969 with the deactivation of the base. Fire training at the former SCAFB FTA for ANGB personnel and local fire departments occurred from 1970 until August 1986. However, during use of the FTA by these parties, JP-4 jet fuel was used as the flammable liquid.

A significant factor in post-Air Force waste disposal practice at the Airfield occurred in the late 1970s or early 1980s when the nearby Southampton Town Landfill was closed. The closing of the landfill removed a convenient disposal site for the SCA, including its tenants. Prior to the closing, most of the general refuse from the airport reportedly went to that landfill. Currently a transfer station

located approximately 5 miles west of the base is used for general waste disposal. The wastes are then shipped to a Suffolk County landfill.

Until recently, all waste POLs and solvents from ANG operations have been disposed of off-base by private contractor. They are currently disposed of through the DRMO. These wastes include PD-680 (a petroleum-based solvent), trichloroethylene (TCE), perchloroethylene (PERC), paint wastes, paint strippers and thinners, synthetic oils, engine oils, hydraulic oils, and waste or recovered fuels as shown on Table 4-2.

Because the county does not operate any aircraft maintenance facilities of its own, the amount of waste POLs it generates is reportedly small and limited to maintenance of the airport vehicles. A number of the airport's tenants, however, are involved in aircraft maintenance and engine rebuilding operations that would produce wastes similar to those listed in Table 4-2 for the ANG. Although the waste handling practices of those tenants are unknown, it can be assumed that most of wastes are disposed of off airport property.

Construction debris and refuse associated with the destruction, refurbishing, and construction of buildings at the airfield constitute the majority of refuse disposed of at Site 1, Runway Disposal Area. Reportedly, the Suffolk County Airport and its tenants used Site 1, Runway Disposal Area, for disposal of construction and other inert debris up until about 1982. It has been reported that in the past the county has granted permission to private contractors to store debris at Site 1 with the understanding that the contractor would later remove it. According to the county, some of these wastes were never removed.

The handling and disposal of nondomestic wastes associated with the private commercial establishments located on the former base have always been the responsibility of those organizations. Although it cannot be definitively stated how each airport tenant has disposed of its refuse over the past 15 years, it is certain that based on the type and condition of material observed at Site 1, Runway Disposal Area, some of the refuse has been disposed of at this location.

IV.A.2 Site 1, Runway Disposal Area - Wastes and Disposal Methods

The Runway Disposal Area at the former SCAFB is located at the southeast end of the northwest-southeast Runway 33 extension (Figure 2-4). It currently encompasses 8.7 acres of land, most of which is scattered with scrap metal and

construction debris. This area was initially used by SCAFB for concrete rubble generated during reconstruction of the airfield runways primarily in the mid-1950s and early 1960s.

Additional wastes were reportedly placed at the site after the base's deactivation period. Aerial photography available for this area indicates that with the exception of runway debris, the majority of wastes were placed at the site after 1969. Aerial photography taken in 1947, 1961, 1969, 1976, 1980, and 1986 show this area to be undisturbed in 1947, deforested in 1961 with concrete rubble near the Runway 33 extension, and characterized by a significant increase of wastes placed at the site between 1969 and 1986. Table 4-2 provides a list of the various wastes currently located in the disposal area as identified during the site inspection in August 1986. Photographs of the site taken during the inspection in August 1986 are provided in Appendix E.

Although all of these wastes were clearly disposed of aboveground, in the western portion of the disposal area, the earth is scarred and appears to have been scraped, indicative of earth movement and possible waste burial. Reportedly, Suffolk County personnel did some earth moving at the disposal area in the mid-1970s. Although the purpose and extent of the earth moving is unknown, it was reported to have occurred in the western corner of the site, adjacent to the entrance and toe of the western slope.

The area where the disposal area is currently situated was cleared by the AF sometime between 1951 and 1961. Although the exact date is unknown, the disposal area was reportedly active in the mid-1950s. The area was initially used as a disposal area for broken-up concrete from various runway reconstruction projects at the airfield. The area was utilized for this purpose from the early-to-mid 1950s to 1969. The concrete piles were placed as close to the end of the runway as possible for the eventual extension of the runway. Although this runway was never extended, the concrete remains as originally placed, covering about one-third of the 8.7 acres composing the site.

Reportedly, AF personnel did not use this disposal area for wastes other than concrete during either the base's normal operation or shutdown phase. Reportedly, prior to base deactivation, regular inspections of the disposal area were conducted by AF personnel to prevent the unauthorized disposal of wastes [illegible] this site. It was further reported that any items except the concrete that were found during these

TABLE 4-2
SUMMARY OF SITE INFORMATION
SUFFOLK COUNTY AIRPORT, WESTHAMPTON BEACH, NEW YORK

Site Number	Site Name	Location	Period of[1,2] Disposal	Waste Types	Waste[2] Quantities	Potential[3] Sources
1	Runway Disposal Area	SE corner of base; end of Runway 33 extension	mid-1950s - Present	All wastes	175,000 ft^3	SCAFB, SCA, ANGB, SCAL, PC, UD[4]
			mid-1950s - 1969	o runway concrete rubble	150,000 ft^3	SCAFB
			1970 - Present	o scrap metal	3,000 ft^3	SCA, ANGB, SCAL, PC, UD
			mid-1950s - Present	o construction debris	18,000 ft^3	SCAFB, SCA, ANGB, SCAL, PC, UD
			1970 - Present	o metal and wood furniture	1,000 ft^3	SCA, ANGB, SCAL, UD
			1970 - Present	o 55-gal drums[5]	40 - 50	SCA, ANGB, SCAL, PC, UD
			1970 - Present	o 1-5 gal rusted containers[5,6]	100 - 200	SCA, ANGB, SCAL, PC, UD
			Post 1980	o metal treatment resin[6]	5 gal	SCA, ANGB, SCAL, PC, UD
			Post 1980	o metal coating compound[7]	5 gal	SCA, ANGB, SCAL, PC, UD
			1970 - Present	o yard wastes (organic)	1,200 ft^3	SCA, ANGB, SCAL, PC, UD
			1970 - Present	o aircraft and vehicle maintenance materials[8]	700 ft^3	SCA, ANGB, SCAL, LR, UD
			1970 - Present	o domestic wastes[9]	1,000 ft^3	SCA, UD
			1970 - 1982	o 275-gal POL tank[5]	1	SCA, ANGB, SCAL, PC, UD

TABLE 4-2 (continued)
SUMMARY OF SITE INFORMATION
SUFFOLK COUNTY AIRPORT, WESTHAMPTON BEACH, NEW YORK

Site Number	Site Name	Location	Period of Disposal	Waste Types	Waste[2,10] Quantities	Potential[3] Sources
2	Canine Kennel Landfill	1600 ft. from SE corner of SCAFB	1970	All wastes[9]	300,000 ft^3	SCAFB
			1970	o scrap metal		SCARB
			1970	o metal and wood furniture		SCAFB
			Post 1970	o capacitor		UD
			1970	o photographic equipment		SCAFB
			1970	o office equipment[11]		SCAFB
			1970	o appliances		SCAFB

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[1] Waste disposal by SCAFB ended in 1969; authorized waste disposal by Suffolk County Airport, its tenants (including ANGB), and private contractors ended in 1982.
[2] See Section IV.A.3 for assumptions and basis of estimates.
[3] Assumed based on nature of wastes, operational activities, interviews, and engineering judgment.
[4] Potential sources:
SCAFB - Suffolk County Air Force Base
SCA - Suffolk County Airport
SCAL - Suffolk County Airport Lessees
PC - Private Contractors
UD - Unauthorized Disposal-source unknown
[5] The majority of these drums appeared to be empty at time of site inspection in August 1986.
[6] Includes paint, solvents, POLs, domestic, floor cleaners, metal treatment compound, and tarring compounds.
[7] Full 5-gallon containers with closed lids.
[8] Includes parts, oil cans, filters, and engine cleaner containers.
[9] Includes scattered cans, bottles, newspapers, home appliances, and bagged household refuse.
[10] No information available for volumes of individual waste types.
[11] Includes typewriters, filing cabinets, and adding machines.

inspections were removed and disposed of according to base practice. Some inert yard waste and construction debris may have remained due to its innocuous condition.

It is unlikely that AF personnel routinely deposited wastes at the site during their shutdown operations in 1969 and 1970 because all base wastes generated by the deactivation process were disposed of through off-base disposal at the Town Landfill, burning at the FTA or one-time burn area, off-base resale or redistribution, or burial at Site 2, Canine Kennel Landfill. In addition, most of the refuse found at the disposal site is not material that would commonly be associated with a closeout operation.

The majority of waste at this disposal area has thus been determined to have been disposed of during the post-AF period extending from 1970 to the present. The SCA, its tenants, and private contractors at the SCA used this area from 1970 to 1982. Use of the site as a disposal area was officially prohibited in 1982. Unauthorized disposal has occurred at this site since 1970.

The estimated quantities of wastes currently located in the disposal area are provided in Table 4-2. The estimates provided are based solely on assumptions made following site inspection in August 1986. The estimates also consider only wastes visible on the surface. No documented or reported information was collected concerning actual quantities known to be disposed of at the site.

Approximately one-third or 2.9 acres of the 8.7-acre disposal area was determined to be the area where concrete rubble from runway reconstruction was deposited on the surface. Assuming one-half of this area has been covered to an average depth of 3 feet, an estimated 150,000 cubic feet (ft^3) of runway concrete has been disposed of at Site 1.

An estimated 5 percent of the remaining 5.8 acres of Site 1 was assumed to be covered with waste or debris; the average depth of debris was estimated to be 2 feet. Thus, an estimated 25,000 ft^3 of debris (excluding runway concrete rubble) has been placed at Site 1 since it began operation. Of this total 25,000 ft^3 of debris, the following percentages of waste types were assumed to exist at the site based on visual inspection and aerial photography:

Waste Type	Percent of Total	Estimated Quantity
• Construction debris (excluding runway concrete)	70	118,000 ft^3
• Scrap metal	12	3,000 ft^3
• Yard waste (organic)	5	1,200 ft^3
• Furniture	4	1,000 ft^3
• Domestic waste	4	1,000 ft^3
• Miscellaneous aircraft and vehicle parts	3	700 ft^3
• 55-gal drums	1	40-50
• 1- to 5-gal containers	1	100-200
• Other miscellaneous debris (not included in above categories)	1	250 ft^3

The above quantities and percentages are only rough approximations of the volumes of wastes located at Site 1. Although the above-mentioned wastes are essentially themselves inert, there is potential for contaminants to be associated with the above wastes, especially with the drums and containers. These containers (currently rusted and empty) may have potentially contained POLs, solvents, paint wastes, and other liquid materials. In addition, there is potential for buried wastes within this disposal area.

Migration of contaminants from this site is likely. The wastes were placed on very permeable sands. Percolation through the sandy soils to the surficial aquifer is likely. However, it is unlikely that contaminants in the surficial aquifer would migrate downward into lower aquifers; rather, contaminants would likely migrate horizontally toward Quantuck Creek. Potential contaminant receptors would include those populations employing shallow aquifer water for potable use. In addition, the site is located within the transition zone of the rare dwarf pine barrens community.

Based upon SCAFB activities prior to 1970, a Phase II study is not recommended for Site 1. However, based on occurrences after transfer of site property to Suffolk County, additional contamination assessment investigations appear warrented at Site 1.

IV.A.3 Site 2, Canine Kennel Landfill--Wastes and Disposal Methods

The Canine Kennel Landfill, located on the east side of the airport adjacent to the former DRMO area (Figure 2-5), is the site previously identified as the location of the major burial operation of inert material during the final phase of the base's deactivation. Information obtained during this study indicates that the whole waste disposal process lasted only about 2 months (March to May) in the spring of 1970 and involved only items remaining at DRMO prior to final shutdown of the base. A composite list of items reported to have been disposed of in the landfill is presented in Table 4-2. Photographs of the site taken in August 1986 are provided in Appendix E. All of the wastes reportedly disposed of at this site were inert metal and/or wood products that would pose no threat to the surrounding environment. According to interviewees familiar with the site, the AF never used this site for the disposal of liquids, chemicals, munitions, or other potentially harmful hazardous wastes. Because the previously described one-time burning operation to destroy all remaining flammable materials on the base (Section IV.A.1) took place several months prior to the burial of wastes at the Canine Kennel Landfill, it seems unlikely that any of the materials disposed of in this landfill would have been liquids or flammables.

In 1984 an investigation of the eroded areas of the Canine Kennel Landfill resulted in discovery of a number of crushed and broken transformers and small capacitors on the surface of the sand in a shallow ravine. Soils from the area were sampled at that time for PCB contamination; PCB-1254 in concentrations ranging from 54 to 1,700 parts per million (ppm) was detected in eight of the nine samples collected (ERCO, 1984). NYDEC was identified as the client for the soils analyses. Although the transformers have since been removed, no other remediation is known to have taken place in this area.

Despite the presence of these transformers at Site 2, information obtained through interviews and interpretation of aerial photographs indicates that the transformers did not originate at the site from the AF's burial operation. Most of the transformers at the base were reportedly left in-place after the base was closed, and those that were removed were shipped to a private contractor to repay a previous loan of transformers to the base. The aerial photos show the sand at the DRMO burial area to be redisturbed and in its current condition as early as 1976. It is likely that the transformers were put into the ravined area between 1970 and 1976. The source of the transformers and capacitors is unknown.

The burial operation at the Canine Kennel Landfill involved the construction of a pit between 10 and 15 feet deep in the sand adjacent to the DRMO yard and adjacent to the former Kennel area. The pit encompassed approximately 1 acre. Inert material, as identified in Table 4-2, that had not been sold or redistributed off-base was placed in the hole and crushed by a bulldozer. The crushing was done both to discourage unauthorized removal of potentially salvageable materials at the site and to allow for compaction of the area upon final closure. Once all of the remaining items from DRMO had been placed in the hole and crushed, the wastes were covered with approximately 2 feet of sand and smoothed over to allow for revegetation. Excavated sand from the hole was stockpiled in the northeast corner of the site for later use in backfilling the site. Excess sand remaining from the operation is still stockpiled.

Since the operation was completed in 1970, some of the sand has eroded and/or has been removed from the area of the pit, and some of the previously buried material has been exposed; bent, broken, and rusted pieces of sheet metal and furniture were visible at the time of the site inspection in August 1986. Some of the exposed wastes may have resulted from transformer removal in 1984. Also scattered on the surface of the site were three or four small, empty, rusted cans; a dummy warhead; a small capacitor; a crushed electrical transformer; and an automotive antifreeze container. Based on information obtained during this study, it seems unlikely that any of this material except the partially buried sheetmetal and discarded furniture is from the burial operation.

No information was collected concerning the quantity of wastes placed in the landfill. However, the size of the landfill was estimated to be 1 acre. Assuming an average waste depth of 12 feet and also assuming half of this volume is waste, an estimated 300,000 cubic feet of wastes has been buried at Site 2. In addition, approximately eight transformers and five to ten small capacitors were discovered at the site and removed in 1984.

Migration of contaminants from this site is likely. The wastes were placed on very permeable sands. PCB contamination of the near-surface soils within the landfill has been confirmed. There is potential for migration of contaminants through the sandy soils to the surficial aquifer. However, it is unlikely that contaminants in the surficial aquifer would migrate downward into deeper aquifers; rather, contaminants would migrate horizontally toward Quantuck Creek.

Potential contaminant receptors would include those populations employing shallow aquifer water for potable use. In addition, the site is located in the transition zone of the rare dwarf pine barrens community.

Based on SCAFB activities prior to 1971, a Phase II study is not recommended for Site 2. However, based on occurrences after transfer of property to Suffolk County, additional contamination assessment investigations appear warrented at Site 2.

IV.B SITE EVALUATIONS AND HAZARD ASSESSMENT

Based on the findings presented in Section A of this chapter, the two disposal areas at the former SCAFB have been evaluated and numerically ranked using the AF-developed HARM. The results of the ratings for the two sites are presented in Appendix G. These rankings have been developed based upon information about the sites obtained through an on-site base visit and subsequent analysis, in accordance with the AFHARM presented in Appendix F. It is important to note that the site rankings reflect the current condition of the sites and not necessarily the condition that the areas were in when the AF closed the base in 1970.

IV.B.1 Site 1, Runway Disposal Area - Ranking

The HARM ranking for the Runway Disposal Area was determined to be 52, based for the most part on the potential receptors and environment in the area of the disposal site. Significant factors affecting the ranking included nearby critical environments and the nearby use of the uppermost groundwater aquifer.

The Waste Characteristics subscore for the area is relatively low and assumes a small quantity of suspected wastes with a medium hazard rating. Conclusions and recommendations for the area that incorporate the results from this ranking are presented in Sections V and VI, respectively.

IV.B.2 Site 2, Canine Kennel Landfill - Ranking

The Canine Kennel Landfill at the former SCAFB was determined to have a HARM ranking of 57 based upon information pertinent to the area collected during the site investigation. Important factors in the ranking included the confirmed presence of PCBs in the near-surface soils at the site (Section IV.A.3), nearby critical environments, and local use of the uppermost groundwater aquifer. Conclusions and recommendations for the area that incorporate the results of this ranking are presented in Sections V and VI, respectively.

V. CONCLUSIONS

The following conclusions are based on information obtained through interviews with SCAFB, SCA, and ANG personnel; information collected from outside agencies; review of SCAFB records; and field observations.

- Evidence indicates that neither Site 1, Runway Disposal Area, nor Site 2, Canine Kennel Landfill, was used by SCAFB for disposal of hazardous wastes.

- Based on the history, operation, and use of Site 1 and Site 2, there is potential for hazardous wastes to have been placed at these sites after July 1970.

- Visual evidence indicates that unauthorized waste disposal has occurred at Site 1; wastes have been disposed of at this site during 1986.

- The two sites of concern have been evaluated using the AF's HARM. The scores were 52 and 57 for Site 1 and Site 2, respectively.

- Neither of the two sites exhibited environmental stress although the disturbed sandy soils and lack of soil cover limit vegetative growth.

- Confirmation of PCB contamination in the near-surface soil has been made at Site 2; the source of PCB contamination (PCB transformers and capacitors) has been removed.

- The soils at SCA are very sandy and have rapid permeability characteristics.

- The water table at SCA is shallow, ranging from approximately 10 to 40 feet below the surface. Groundwater below each site is within 20 feet of the surface.

- Contaminants migrating from the two sites would follow groundwater in the southeasterly direction toward Quantuck Creek.

- Municipal wells that supply potable water to Suffolk County are located within 1,500 feet south of the sites; these wells are screened in the shallow aquifer.

- The shallow aquifer is the sole source of potable water in the vicinity of the airport.
- A state wildlife refuge is located within 1,000 feet downgradient of the sites.
- The FTA is situated upgradient of Site 1.
- The Southampton Town Landfill (closed) is located adjacent to the airport's southern boundary; groundwater flow direction beneath this landfill is toward Quantuck Creek.
- Because of very permeable soils and high water table at SCA, contaminants released to the environment have potential for off-base migration.

VI. RECOMMENDATIONS

VI.A INTRODUCTION

Based on SCAFB activities at Site 1, Runway Disposal Area, and Site 2, Canine Kennel Landfill, prior to July 1970, IRP Phase II investigations would not be recommended for either site. However, based on occurrences at these sites after transfer of SCAFB property to Suffolk County, including unauthorized disposal of materials on the site, additional confirmatory investigations appear warranted. To assist in scoping these investigations, a potential field investigative program is outlined below.

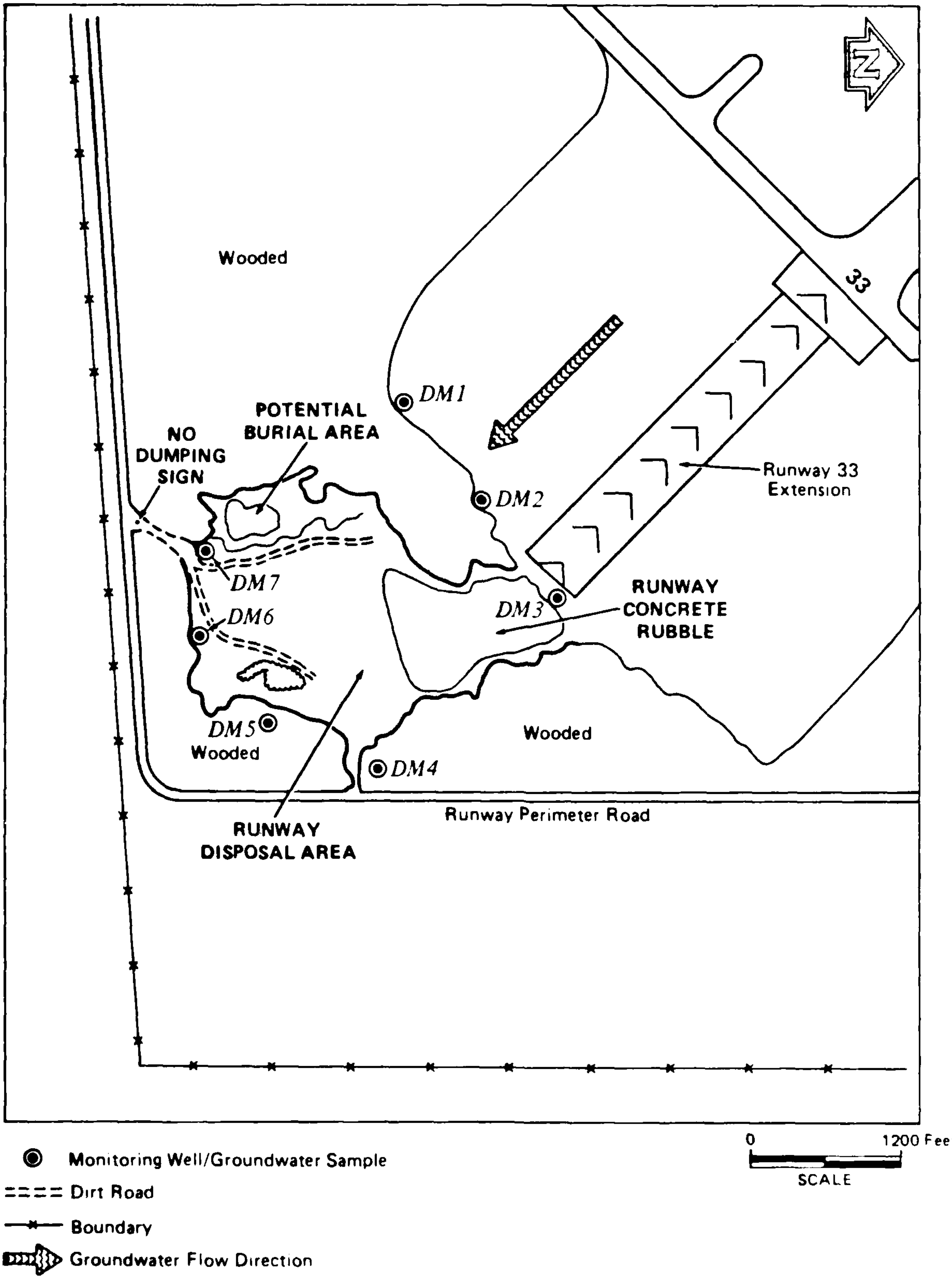
The purpose of the site-specific recommendations is to confirm or refute the presence of contamination at each of the sites. If confirmation is made, subsequent investigative efforts should be accomplished to fully characterize the extent of any soil and groundwater contamination.

IV.A.1 Site 1, Runway Disposal Area Recommendations

It is recommended that monitoring wells be installed at this site. Wells should be placed both upgradient and downgradient of the site because the former FTA is located upgradient of this area. Waste POLs and solvents were disposed of at the FTA. Therefore, an upgradient well(s) is important to separate the potential effects of the FTA and the Runway Disposal Area on groundwater quality.

Monitoring recommendations (Figure 6-1) are as follows:

Investigation:	Geophysics (magnetometer). A magnetometer survey is recommended to determine whether metal containers were buried at the site. The recommended area of the survey is located in the western corner of the site. Results will determine whether additional field sampling and testing are necessary.
Monitoring Wells:	Seven.
Types of Samples:	Groundwater; soil taken at 5-foot intervals (starting at 0 feet), at formation changes, and at the water table. Soil samples will be collected for classification and visual inspection only.
Frequency:	Groundwater, four times maximum, at quarterly intervals.



INSTALLATION ASSESSMENT **SUFFOLK COUNTY AIRPORT** **Westhampton Beach, New York**	**FIGURE 6-1** **SITE 1, RUNWAY DISPOSAL AREA RECOMMENDATIONS**

Testing Parameters: Priority pollutant (PP) purgeable organics, PP acid-extractable organics, PP metals, PP pesticides, petroleum hydrocarbons, oil and grease, water levels (in wells), pH, and specific conductance.

Remarks: Seven wells are recommended around Site 1. Wells DM1, DM2, and DM3 are assumed to be background wells. Wells DM4, DM5, DM6, and DM7 are the downgradient wells. Wells will be installed to a depth of approximately 10 feet below the top of the surficial aquifer to allow for sampling within the aquifer. Well depth will be approximately 30 feet. Migration of contaminants from the site would most likely occur within the surficial aquifer. The well network and installation should be coordinated with site recommendations and investigation of the FTA. A series of wells was previously installed around this site, and samples were collected for analysis. A review of well data suggested that these wells were not useful for this investigation. Sample results are provided in Appendix D.

In addition to the monitoring program recommended for Site 1, it is also recommended that further actions be taken to prohibit continuing unauthorized disposal at the site. Appropriate actions include barricading the entrance with a fence, heavy-link chain, or earthen mound. The "No Dumping" sign currently located in the entrance roadway is easily removable to allow vehicle entry.

IV.A.2 Site 2, Canine Kennel Landfill Recommendations

It is recommended that monitoring wells be installed at this site. Because PCB contaminants were detected in the near-surface soils at this site in 1984 (Appendix D), well samples should be collected to determine whether contaminants have migrated from the site.

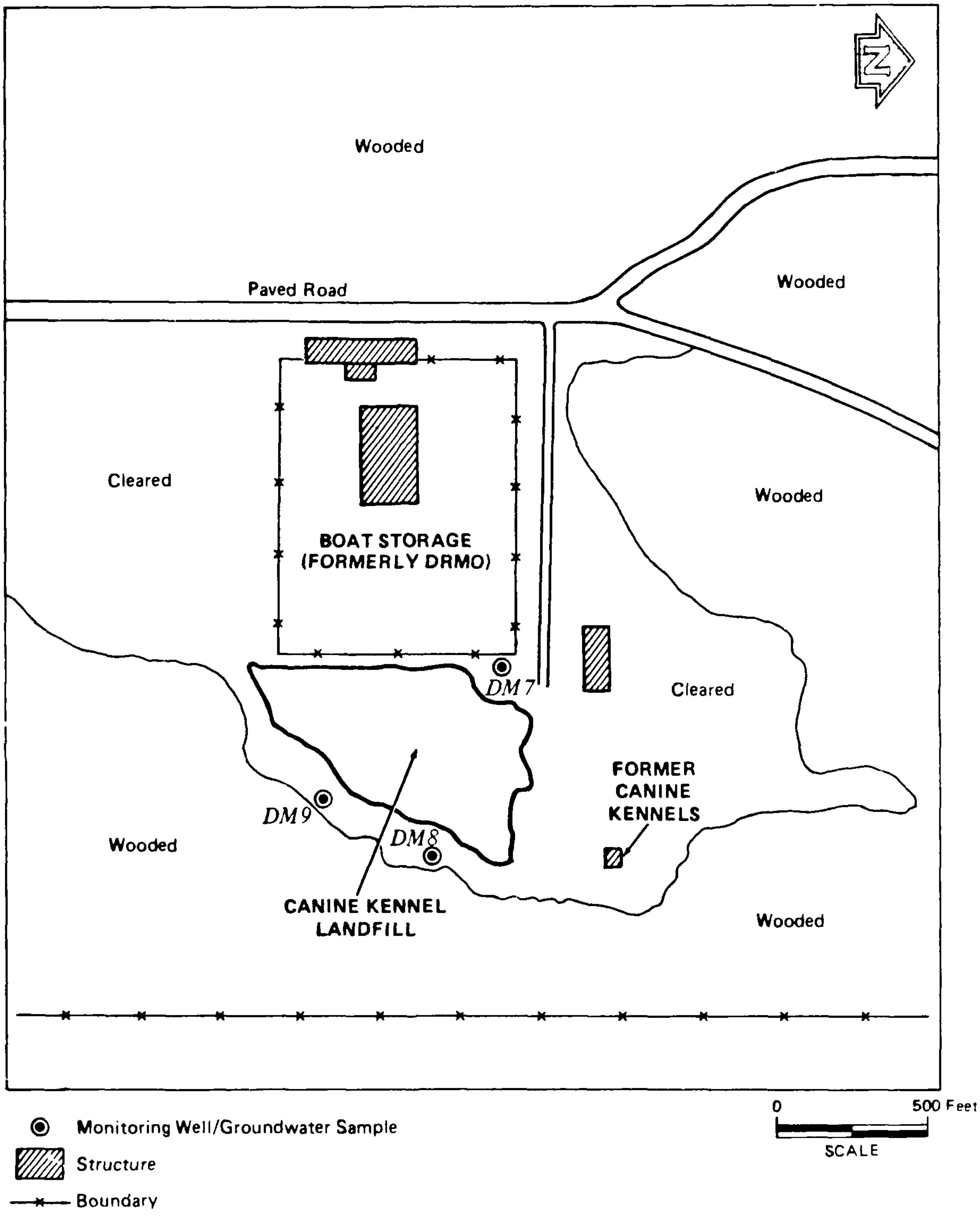
Monitoring recommendations (Figure 6-2) are as follows:

Types of Samples: Groundwater; soil taken at 5-foot intervals (starting at 0 feet), formation changes, and at the water table. Soil samples will be collected for classification and visual inspection only.

Frequency: Groundwater, four times maximum, at quarterly intervals.

Testing Parameters: PP metals, PP PCBs, water levels (in wells), pH, and specific conductance.

Remarks: Three wells are recommended around Site 2. Well DM7 is assumed to be a background well. Wells DM8 and DM9 are the downgradient wells. Wells will be installed to a depth of approximately 10 feet below the top of the surficial aquifer to allow for sampling within the aquifer. Well depths will be approximately 30 feet. Migration of contaminants from the site would most likely occur within the surficial aquifer. Although Site 2 was reportedly used only for disposal of inert wastes during operation by SCAFB, information concerning site access and use after 1970 is limited. Because wells are recommended for detection of PCB contaminants confirmed to be in the soils at the site from the disposal of PCB transformers and/or capacitors, it is recommended that consideration be given to expanding the sampling program to include priority pollutants.



INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach,
New York

FIGURE 6-2
SITE 2, CANINE KENNEL LANDFILL RECOMMENDATIONS

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Appendix A

Brief Resumes of Records Search Team Members

The following core team of professionals with roles as identified performed the Phase I Study:

- o R.C. Tucker, Program Manager
- o G.E. Wood, Project Manager and Environmental Engineer
- o M.J. McCann, Chemical Engineer
- o A.J. Duda, Hydrogeologist
- o W.M. Levitan, Ecologist

Brief resumes are provided below.

Richard C. Tucker, P.E., Partner

Education/Training: Georgia Institute of Technology, MS, Civil Engineering, 1965; Georgia Institute of Technology, BCE, Civil Engineering, 1964.

Work Experience: Mr. Tucker has served as the program manager and project director for numerous waste management projects involving a range of services, from records search and initial site evaluation through contamination assessment and remedial action planning and design. He is program manager for the Dames & Moore contract (as an alternate) to assist Martin Marietta in the Air Force remedial action program. He was project director for USATHAMA's Multi-Installation Eastern Sites Contamination Surveys, which included Ft. Drum, New York; Sudbury Annex, Massachusetts; and the Rocky Mountain Arsenal, Southern Tier, Colorado and Midwest sites. Since March 1984 he has been partner-in-charge of the contamination assessment and RI/FS for the Defense General Supply Center site, Richmond, Virginia, which was placed on the National Priorities List. He is also program manager for USATHAMA's Remedial Action Technical Support and Services Program in which Dames & Moore is performing remedial action feasibility studies for multiple installations. He recently directed four IR Phase I site studies in South Carolina, Tennessee, and Kentucky for the U.S. Navy. Mr. Tucker has extensive experience in the key areas required for performance of contamination assessments, site evaluations, engineering design, cost estimating, field activities, and remedial action planning and design. With the U.S. Army Corps of Engineers and with Dames & Moore, he has considerable experience in public involvement, including public hearings, briefings (professional and lay), and citizen interaction. Mr. Tucker is very active professionally and is both a member and an officer or committee participant in a number of professional societies.

Grace E. Wood, Civil/Environmental Engineer, P.E.

Education/Training: University of Virginia, ME, Civil (Environmental) Engineering, 1979; University of Virginia, BS, Engineering Science, 1978.

Work Experience: A project engineer at Dames & Moore since 1979, Ms. Wood has been involved in a variety of pollution control projects involving water resources engineering, waste management evaluations, and groundwater contamination investigations. She has recently been involved in completing four IR Phase I studies in South Carolina, Tennessee, and Kentucky for the U.S. Navy under the NACIP program. Ms. Wood was project manager for evaluating the proposed site Hazard Assessment Rating Methodology II for the U.S. Air Force and determining applicability, relevancy of criteria, and ease of application. She has

performed technical and cost evaluations of excavation and land disposal alternatives for hazardous wastes at a USATHAMA installation. Her experience also includes hydrogeologic evaluations of sludge disposal sites; preparation of hazardous waste management plans for utilities; RI/FS site investigations; and implementation of drilling programs, well installation, and surface-water and groundwater sampling at a National Priorities List (Superfund) site. She has designed water storage and transport systems, sedimentation ponds, and diversion systems for runoff control. She has participated in the preparation of areawide basin water quality management plans and feasibility studies for cost-effective pollution control. She has had significant surface-water quality modeling experience, used in assessing pollution control strategies and mitigative measures. Currently, Ms. Wood is managing the implementation of a remedial action plan for groundwater contamination cleanup. The plan includes well and treatment system installation for groundwater recovery, treatment, and reinjection.

Michael J. McCann, Chemical Engineer

Education/Training: Clarkson University, MS, Environmental Engineering, 1986; University of Notre Dame, BS, Chemical Engineering, 1984.

Work Experience: Since joining Dames & Moore at the beginning of 1986, Mr. McCann has been involved in projects pertaining to both the RCRA and CERCLA environmental programs. His experience with hazardous waste site remediation includes providing chemical engineering assistance in site contamination assessments and developing remedial action plans for USATHAMA military installations and private industry and participating in the preparation of a series of RI/FS documents for the Defense General Supply Center, Richmond, Virginia, which was placed on the National Priorities List. Mr. McCann has participated in the review of RI/FS documents for a Virginia Superfund site and has developed and evaluated additional remedial action alternatives for the site. Mr. McCann has also prepared an Underground Storage Tank Maintenance, Testing, and Closure document and an Oil Spill Prevention, Control, and Countermeasures Plan for major industrial client and has assisted in the preparation and support of a RCRA Part B permit application for a large computer manufacturing firm. He has also provided technical support in the sizing of a RCRA regulated hazardous waste incinerator for an industrial concern.

Anthony J. Duda, Hydrogeologist

Education/Training: Rutgers University, BA, Geology, 1978; University of Kentucky, MS candidate, Geology; U.S. Environmental Protection Agency, Personnel Protection and Safety Course, 1983.

Work Experience: Since joining Dames & Moore in 1980, Mr. Duda has contributed to numerous hydrogeologic and other subsurface investigations, the majority involving hazardous contaminant problems. He has performed initial assessment studies for four naval activities under the Navy Assessment and Control of Installation Pollutants Program. Tasks included record searches, on-site surveys, data evaluation, site rankings using the Confirmation Study Ranking Model, and development of recommendations for confirmation studies. Mr. Duda also evaluated the proposed Hazard Assessment Rating Methodology II for the U.S. Air Force. Project tasks included determining the ease of application, relevancy of

criteria and ability of the model to give relative levels of hazard to sites with dissimilar chemical, environmental, and geographical characteristics. Since 1984 he has been involved with a multiphase investigation of a National Priority List (CERCLA) site at the Defense General Supply Center, Richmond, Virginia, for the Norfolk District of the Corps of Engineers and at Fort Drum, New York, for USATHAMA. Mr. Duda has developed and implemented a hazardous substance mitigation plan for a major oil company installation and conducted sampling of wastewater effluents at a ball-bearing plant, both in Kentucky. He has supervised hydrogeologic field investigations for a waste disposal firm in Ohio and a rubber company in Kentucky, evaluated an "orphan" buried waste site for a conservatory group, and conducted effluent sampling at a diesel engine plant in Indiana. He has also developed and implemented contamination mitigation plans for a solvent recycling company and supervised groundwater contamination monitoring plans at four pulp and paper plants in the Southwest and at an oil company in Iowa. Mr. Duda has conducted environmental site assessments and developed hazardous waste groundwater monitoring or mitigation plans in more than a dozen states.

William M. Levitan, Ecologist/Toxicologist

Education/Training: University of Delaware, MS, Marine Studies, 1977; Johns Hopkins University, BA, Natural Science, 1975; U.S. Department of Agriculture Graduate School, Washington, DC, continuing education in toxicology, 1979-1980.

Work Experience: Mr. Levitan's 8 years with Dames & Moore included assessing the impacts on the environment and risks to human health of various hazardous waste and energy development projects. Mr. Levitan performed nearly 50 environmental and human health risk assessments for a wide variety of projects, including hazardous waste sites. His roles in these projects were in characterizing environmental conditions and in determining routes of transport, environmental concentrations, and exposure for numerous types of contaminants, including volatile organics, metals, and explosives. Mr. Levitan was Office Safety Coordinator for 2 years. In this capacity, he was responsible for Dames & Moore's adherence to the firmwide health and safety program and preparation and monitoring of health and safety plans for hazardous wastes projects. He prepared more than 15 such plans, including 7 for USATHAMA; 1 for the U.S. Army Corps of Engineers, Norfolk District (Defense General Supply Center, Richmond, VA); and 1 for the Naval Facilities Engineering Command (Atlantic Division). He also performed numerous investigations of toxicological effects resulting from such activities as hazardous waste disposal, oil spills, coal and fly ash storage, drilling muds, and microwave transmissions. He was involved in several contamination surveys, including four for the U.S. Army. In these surveys, he performed health and safety site reconnaissance and prepared the associated plans, soil sampling, well installation, and environmental and human health effects assessments.

Appendix B
Outside Agency Contact List

OUTSIDE AGENCY CONTACT LIST

Various agencies were contacted for documents and information pertinent to the Installation Assessment effort:

- Bolling AFB, Historical Center, Washington, D.C. (202-767-5088).
- DOD Explosive Safety Board, Alexandria, VA (703-325-0969).
- Federal Archives and Records Center, Bayonne, NJ (201-823-7252).
- Hampton Chronicle News Office, Westhampton Beach, NY (516-288-1100).
- Library of Congress, Washington, D.C. (202-287-6500).
- Long Island Regional Planning Commission, Hauppauge, NY (516-360-5006).
- Maxwell AFB, Air University Library, Montgomery, AL (205-293-8333).
- National Archives, Washington, D.C. (202-523-3218).
- National Archives, Cartographic Branch, Alexandria, VA (703-756-6704).
- National Archives, Military Field Branch, Suitland, MD (301-763-6704).
- New York Department of Environmental Conservation, District Office, Stony Brook, NY (516-751-7900).
- New York Department of Environmental Conservation, Wildlife Resources Center, Delmar, NY (518-439-8014).
- New York Department of Environmental Conservation, Quogue Wildlife Refuge, Quogue, NY (518-439-7488).
- New York Natural Heritage Program, Delmar, NY (518-439-8014).
- St. Louis Records Center, St. Louis, MO.
- Suffolk County Airport, Westhampton, NY (516-288-3600).
- Suffolk County Department of Health Services, Water Resources Bureau, Hauppauge, NY (516-348-2898).
- Suffolk County Environmental Health Service, Riverhead, NY (516-348-2784).

- Suffolk County Health Department, Farmingville, NY (516-451-4640).
- Suffolk County Tax Assessment Office, Riverhead, NY.
- Suffolk County Water Authority, Westhampton Beach, NY (516-288-1034).
- Town of Southhampton Zoning Office, Southhampton, NY.
- U.S. Air Force Military Records Office, Washington, D.C. (202-649-3527).
- U.S. Army Corps of Engineers, New York District Office, NY (212-264-0100).
- U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, Aerial Photography Field Office, Salt Lake City, UT (801-524-5294).
- U.S. Department of Agriculture, Soil Conservation Service, Riverhead, NY (516-727-2732).
- U.S. Geological Survey, Syosset, NY.
- U.S. Geological Survey, Washington, D.C.
- Village of Quogue, Quogue, NY.
- Village of Westhampton Beach, Westhampton Beach, NY.
- Westhampton Beach Fire Department, Westhampton Beach, NY.
- Westhampton Free Library, Westhampton Beach, NY (576-288-3335).
- 106th Aerospace Rescue and Recovery Group, New York Air National Guard, Westhampton, NY (576-288-4200).

Appendix C

Interview Information

AD-A189 222 US AIR FORCE INSTALLATION RESTORATION PROGRAM PHASE 1 2/2
RECORDS SEARCH FOR..(U) DAMES AND MOORE BETHESDA MD
G E WOODS 20 SEP 87 IRP-620 DE-AC05-84OR21400

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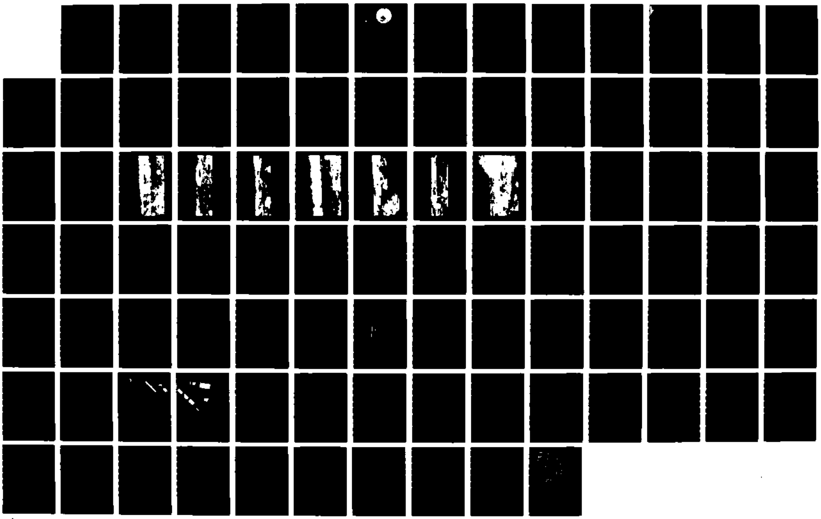

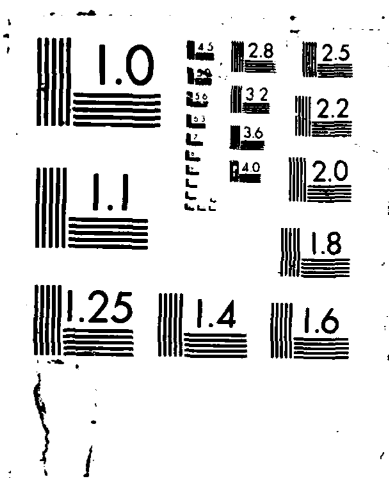
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INTERVIEW INFORMATION

Interview Number	Association[1]	Primary Duties	Years of Association
1	SCA	Maintenance	17
	SCAFB	Aircraft Maintenance	19
2	SCA	Maintenance	17
	SCAFB	Maintenance	12
3	SCA	Maintenance	17
	SCAFB	Maintenance	19
4	SCAFB	Supply/Acting Commander	3
5	SCAFB	Maintenance	11
6	ANGB	Supply	10
	SCAFB	Supply	1
7	ANGB	Supply	17
	SCAFB	Supply/DPDO	16
8	NYS/ANGB	Accounts	16
	SCAFB	Administration	3
9	ANGB		16
	SCAFB	Contracts/Commissary	15
10	ANGB	Aircraft Maintenance	16
	SCAFB	Aircraft Maintenance	5
11	SC/ANGB	Fuels Division	16
	SCAFB	Fuels Division	2
12	ANGB	Clinic	2
13	ANGB	Aircraft Maintenance	10
14	ANGB	Security	9
15	ANGB	Civil Engineering	5

[1] Associations as follows:

ANGB--Air National Guard Base
NYS--State of New York
SC--Suffolk County
SCA--Suffolk County Airport
SCAFB--Suffolk County Air Force Base

Appendix D
Supplemental Environmental Data

Flora and Fauna Species Data
Suffolk County, New York

Source: NYDEC, undated.

QUOGUE WILDLIFE REFUGE

This area of 200 acres is managed by the New York State Conservation Department under a 40-year lease from the Southampton Waterfowl Association. Wildlife on the area benefitting from the management program includes deer, turkeys, pheasants, quail, rabbits, raccoons, muskrats, waterfowl and many species of song birds and small mammals.

Symbols

S - Spring

SU - Summer

F - Fall

W - Winter

\- - - - - - -

A - Abundant

C - Common

U - Uncommon

R - Rare

Ca - Casual

Note: Anyone who has information which would add to the list is encouraged to inform Mr. Helms.

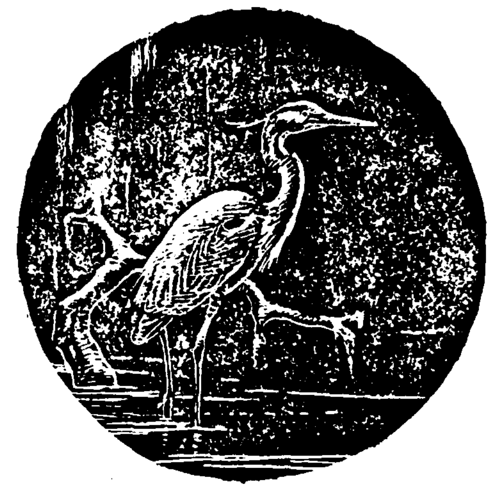
	S	SU	F	W
Loon, Common	U		U	
Grebe, Pied-billed	U		U	R
Cormorant, Double-crested				
Heron, Great-blue	U	U	U	U
Egret, Common	U	U		
Egret, Snowy	U	U	U	
Heron, Black-crowned-night	U	U	U	R
Bittern, American		R	R	
Swan, Mute	U	U	U	U
Goose, Canada	U	U	C	U
Mallard	C	C	C	C
Duck, Black	C	C	C	C
Baldpate	U		U	U
Pintail	U		U	U
Teal, Green-winged	U		U	U
Teal, Blue-winged	U		U	U
Duck, Wood	U		U	U
Redhead	U		U	U
Duck, Ring-necked	U		U	U
Canvasback	U		U	U
Duck, Lesser Scaup	U		U	U
Golden-eye, Common				
Shoveler	Ca			
Merganser, Hooded	C		U	C
Hawk, Red-tailed	U	U	U	R
Hawk, Broad-winged			R	
Hawk, Pigeon	R		R	
Hawk, Marsh	U	U	U	
Hawk, Sharp-shinned				R
Osprey	U	U	U	
Hawk, Cooper's	R		R	R
Hawk, Sparrow	U	U	U	U
Bob-white	U	U	U	U
Pheasant, Ring-necked	U	U	U	U
Grouse, Ruffed	U	U	U	U
Coot			U	R

	S	SU	F	W
Killdeer	U		U	R
Woodcock	U	U	U	R
Snipe, Wilson's	U		U	R
Sandpiper, Spotted	U	U	U	R
Sandpiper, Solitary	U		U	
Yellow-legs, Greater	U	U	U	
Gull, Great Black-backed	U	U	U	U
Gull, Herring	C	C	C	C
Gull, Ring-billed	C	C	C	C
Tern, Common				
Dove, Rock				
Dove, Mourning	C	C	C	U
Cuckoo, Yellow-billed	U	U	U	
Cuckoo, Black-billed	U	U	U	
Owl, Screech	R	R	R	
Owl, Saw whet				R
Owl, Great-horned	R	R	R	
Owl, Short-eared				
Whip-poor-will	U	U		
Nighthawk	U	U		
Swift, Chimney	C	C	C	
Hummingbird, Ruby-throated	U	U	U	
Kingfisher, Belted	U	U	U	U
Flicker	U	U	U	R
Sapsucker, Yellow-bellied	U		U	
Woodpecker, Hairy	U	U	U	U
Woodpecker, Downy	U	U	U	U
Kingbird, Eastern	U	U	U	
Flycatcher, Crested	U	U	U	
Phoebe	U	U	U	
Flycatcher, Least	R			
Swallow, Tree	A	C	A	R
Swallow, Bank	R			
Swallow, Rough-winged	C	C	C	
Swallow, Barn	C	C	C	
Swallow, Cliff	Ca			
Martin, Purple	C	C		

	S	SU	F	W
Jay, Blue	C	C	C	C
Crow	U	U	U	U
Chickadee, Black-capped	C	C	C	C
Nuthatch, White-breasted	U	U	U	U
Nuthatch, Red-breasted	U		U	R
Creeper, Brown	U		U	U
Wren, House	U	U	U	
Wren, Carolina				
Mockingbird	R	R	R	
Catbird	C	C	C	R
Thrasher, Brown	C	C	C	
Robin	C	C	C	U
Thrush, Wood	U	U	U	
Thrush, Hermit	C		C	
Thrush, Swainson's	C		C	
Thrush, Gray-cheeked	C		C	
Veery	U		U	
Bluebird, Eastern	R	R	R	
Gnatcatcher, Blue-gray	R	R	R	
Kinglet, Golden-crowned	C		C	U
Kinglet, Ruby-crowned	C		C	R
Waxwing, Cedar	C		C	U
Starling	A	A	A	A
Vireo, Red-eyed	C	C	C	
Warbler, Black and White	U		U	
Warbler, Blue-winged	U		U	
Warbler, Parula	C		U	
Warbler, Yellow	U	U	U	
Warbler, Magnolia	U		U	
Warbler, Black-throated-blue	U		U	
Warbler, Myrtle	C		C	U
Warbler, Chestnut-sided	U		U	
Warbler, Black-poll	U		U	
Warbler, Pine	U	U	U	
Warbler, Prairie	U	U	U	
Warbler, Palm	U		U	

	S	SU	F	W
Overnbird	U	U	U	
Water-thrush, Northern	U		U	
Yellow-throat	U	U	U	
Warbler, Canada	U		U	
Redstart, American	C	U	C	
Sparrow, House	C	C	C	C
Meadowlark	U		U	U
Red-wing	C	C	A	U
Oriole, Baltimore	U	U	U	
Blackbird, Rusty	U		U	U
Grackle, Purple	C	C	A	U
Cowbird	C	C	C	U
Tanager, Western			A	
Tanager, Scarlet	U	U	U	
Cardinal	U	U	U	U
Grosbeak, Rose-breasted	U		U	
Grosbeak, Evening				U
Dickcissel	Ca		Ca	
Finch, Purple	U		U	R
Finch, House	U	U	U	U
Goldfinch	U	U	U	U
Towhee	U	U	U	U
Sparrow, Savannah	U		U	U
Sparrow, Vesper	U		U	
Sparrow, Lark			U	
Junco, Slate-colored	C		C	C
Sparrow, White-throated	U		C	C
Sparrow, Tree			C	C
Sparrow, Chipping	U	U	U	
Sparrow, Clay-colored				
Sparrow, Field	U	U	U	R
Sparrow, Fox	U		U	U
Sparrow, Lincoln's	R		R	
Sparrow, Swamp	U		C	U
Sparrow, Song	U	U	C	C
Sparrow, Harris			Ca	
Bunting, Snow			Ca	

Quogue Wildlife Refuge



STATE OF NEW YORK
NELSON A. ROCKEFELLER, Governor
CONSERVATION DEPARTMENT
R. STEWART KILBORNE, Commissioner

Cattle Egret
Tufted titmouse
snow bunting
Glossy Ibis
Least Tern
caspian Tern
goshawk
Peregrine Fal.
upland sandpiper
Winter wren
Bl. Th. green warbler

PLEASE DO NOT REMOVE THIS LIST FROM STUDY CENTER

Gael took to Shelter 1971

Vegetation of Quogue Wildlife Refuge, Quogue, L.I., N.Y.

Environment: Pine Oak Woods (soil= sandy loam or sand)
Locations: A. Woods along eastern boundary of refuge, north to field edge.
B. Wooded paths to North Pond and Deer Pond
C. Woods on western boundary of sanctuary along Main Pond Trail.

Scientific name	Common name
Thallophyta	
Ascomycetes	Lichens
✓ Cladonia gracilis	Spoon lichen
✓ Cladonia cristatella	British soldiers
✓ Cladonia pyxidata	Pyxie cup or goblet lichen
✓ Cladonia macilenta	White pin lichen
Usnea sp.	Beard lichen
Basidiomycetes	Mushrooms
✓ Russula emetica (poisonous)	Emetic russula
✓ Lepiota naucinoides	Smooth Lepiota
✓ Clitocybe sp.	Jack O'Lantern (?)
✓ Claveria cinerea	Coral fungus
✓ Lepiota procera	Parasol mushroom
✓ Russula delica	Weaned russula
✓ Geaster hygrometricus	Earth star
✓ Lycoperdon gemmatum	Puff ball
✓ Amanita phalloides (poisonous)	Destroying angel
✓ Russula alutacea var.	Green russula
✓ Hygrophorous puniceus	Red hygrophorous
✓ Amanita rubescens	Blushing venenarius
✓ Russula alutacea var.	Tan russula
Bryophyta	
✓ Leucobryum glaucum	Pincushion moss
✓ Polytrichum commune	Hair cap moss
✓ Lycopodium inundatum	Club moss
Pteridophyta	
Family Osmundaceae	
✓ Osmunda cinnamomea	Cinnamon fern
✓ Osmunda regalis	Royal fern
Family Polypodiaceae	
✓ Onoclea sensibilis	Sensitive fern
✓ Pteridium aquilinum	Bracken fern
Botrychium simplex	Grape fern Dwarf
Botrychium dissectum	Grape fern cut leaf
Ophioglossum vulgatum L.	Adder's Tongue

Scientific name	Common name
Spermatophyta	
Gymnospermae	
Family Pinaceae	
Pinus rigida	Pitch pine
Pinus strobus	White pine
Pinus nigra	Austrian pine
Family Cupressaceae	
Chaemecyparis thyoides	White cedar
Juniperus virginiana	Red cedar
Family Myricaceae	
Myrica ~~cerifera~~ caroliniensis	Bayberry
Myrica peregrina	Sweet fern
Family Fagaceae	
Quercus alba	White oak
Quercus ilicifolia	Scrub oak
Quercus velutina	Black oak
Quercus coccinea	Scarlet oak
Family Polygonaceae	
Rumex acetosella	Sheep sorrel
Family Lauraceae	
Sassafras albidium	Sassafras
Family Rosaceae	
Rubus procumbens	Raspberry
Fragaria canadensis	Strawberry
Family Hypericaceae	
Hypericum perforatum	St. Johnswort
Triadenum virginicum	Marsh St. Johnswort
Family Malaceae	
Aronia arbutifolia	Red chokeberry
Amelanchier canadensis	Serviceberry
Family Araliaceae	
Aralia nudicaulis	Smooth sarsaparilla
Family Anacardiaceae	
~~Toxicodendron~~ Rhus radicans	Poison ivy
[redacted] Rhus vernix	Poison sumac

Scientific name	Common name
Family Cornaceae	
Nyssa sylvatica	Tupelo
Family Ilicaceae	
Ilex opaca	American holly
Ilex glabra	Inkberry
Family Clethraceae	
Clethra alnifolia	Sweet pepperbush
Family Aceraceae	
Acer rubrum	Red or swamp maple
Family Betulaceae	
Alnus rugosa (?)	speckled alder ? Smooth alder
Family Vitaceae	
Parthenocissus quinquefolia	Virginia creeper
Vitis labrusca	Wild grape
Family Liliaceae	
Smilacina racemosa	False Solomon's Seal
Family Ericaceae	
Arctostaphylos Uva-ursi	Bearberry
Kalmia angustifolia	Sheep laurel
Azalea arborescens	Smooth azalea
Azalea viscosa	Swamp azalea
Lyonia mariana	Staggerbush
Eubotrys racemosa	Fetterbush
Kalmia latifolia	Mountain laurel
Vaccinium sp.	Blueberry
Gaylussachia sp.	Huckleberry
Gaylussachia dumosa	Dwarf huckleberry
Family Scrophulariaceae	
? Melampyrum lineare	Cow wheat
Family Caprifoliaceae	
Viburnam acerifolia	Maple leafed viburnam
Viburnam nudum (To North Pond)	Possumhaw
Family Melastomataceae	
Rhexia virginica (To North Pond)	Meadow beauty

Scientific name	Common name
Family Pyrolaceae	
Monotropa uniflora	Indian pipe
Family Primulaceae	
Trientalis borealis (North Pond - Deer Pond)	Star flower

Water Quality Data From POL Area
Suffolk County Airport,
Westhampton Beach, New York

Source: New York Testing Laboratories, Inc., 1982.

NEW YORK TESTING LABORATORIES, INC.

Sample: R14-01 **Lab No.** 82-64452 (A)

VOLATILE COMPOUNDS Parameter (µg/l):	Method No.	CAS No.	Detection Limit (µg/l)	Found (µg/l)
Acrolein	603, 624	107-02-8	100	< 100
Acrylonitrile	603, 624	107-13-1	100	< 100
Benzene	624	71-43-2	10	710
Bromodichloromethane	624	75-27-4	10	< 10
Bromoform	624	75-25-2	10	< 10
Bromomethane	624	74-83-9	10	< 10
Carbon Tetrachloride	624	56-23-5	10	< 10
Chlorobenzene	624	108-90-7	10	< 10
Chlorodibromomethane	624	124-48-1	10	< 10
Chloroethane	624	75-00-3	10	< 10
2-Chloroethyl vinyl ether	624	110-75-8	10	< 10
Chloroform	624	67-66-3	10	< 10
Chloromethane	624	74-87-3	10	< 10
Dichlorodifluoromethane	624	-	10	< 10
1,1-Dichloroethane	624	75-34-3	10	< 10
1,2-Dichloroethane	624	107-06-2	10	< 10
1,1-Dichloroethylene	624	75-35-4	10	< 10
Trans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
1,2-Dichloropropane	624	78-87-5	10	< 10
1,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
Methylene Chloride	624	75-09-2	10	< 10
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

Sample: R14-01 **Lab No.** 82-64452 (A)

VOLATILE COMPOUNDS (Continued)

Parameter (µg/l):	Method No.	CAS No.	Detection Limit (µg/l)	Found (µg/l)
Acetone	-	-	-	Present
2-propanol	-	-	-	Present
Tetrahydrofuran	-	-	-	Present
2-butanone	-	-	-	Present
Cyclohexane	-	-	-	Present
Methyl cyclopentane	-	-	-	Present
2,3 - dimethyl butane	-	-	-	Present
Hexane	-	-	-	Present
Methylcyclohexane	-	-	-	Present
Heptane	-	-	-	Present
2-methylhexane	-	-	-	Present

Water Quality Data From
Monitoring Wells Downgradient of
Site 1, Runway Disposal Area
Suffolk County Airport,
Westhampton Beach, New York

Source: New York Testing Laboratories, Inc., 1982

NEW YORK TESTING LABORATORIES, INC.

Sample: RO-50-02 Lab No. 82-64452 (A-1)

50'-52'

VOLATILE COMPOUNDS

Parameter (µg/l):	Method No.	CAS No.	Detection Limit (µg/l)	Found (µg/l)
Acrolein	603, 624	107-02-8	100	< 100
Acrylonitrile	603, 624	107-13-1	100	< 100
Benzene	624	71-43-2	10	< 10
Bromodichloromethane	624	75-27-4	10	< 10
Bromoform	624	75-25-2	10	< 10
Bromomethane	624	74-83-9	10	< 10
Carbon Tetrachloride	624	56-23-5	10	< 10
Chlorobenzene	624	108-90-7	10	< 10
Chlorodibromomethane	624	124-48-1	10	< 10
Chloroethane	624	75-00-3	10	< 10
2-Chloroethyl vinyl ether	624	110-75-8	10	< 10
Chloroform	624	67-66-3	10	< 10
Chloromethane	624	74-87-3	10	< 10
Dichlorodifluoromethane	624	-	10	< 10
1,1-Dichloroethane	624	75-34-3	10	< 10
1,2-Dichloroethane	624	107-06-2	10	< 10
1,1-Dichloroethylene	624	75-35-4	10	< 10
Trans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
1,2-Dichloropropane	624	78-87-5	10	< 10
1,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
Methylene Chloride	624	75-09-2	10	< 10
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

Sample: RO-50-02 (Continued) Lab No. 82-64452 (A-1)

50'-52'

VOLATILE COMPOUNDS

Parameter (ug/l)	Method No.	CAS No.	Detection Limit (ug/l)	Found (ug/l)
Carbon Disulfide	-	-	-	Present
Methylcyclopentane	-	-	-	Present
3-methylpentane	-	-	-	Present
Hexane	-	-	-	Present
2-methyl-3-pentanone	-	-	-	Present
2,4-dimethyl-3-pentanone	-	-	-	Present

NEW YORK TESTING LABORATORIES, INC.

Sample: RO-50-01 Lab No. 82-64452 (A-1)

60-62'

VOLATILE COMPOUNDS

Parameter (µg/l):	Method No.	CAS No.	Detection Limit (µg/l)	Found (µg/l)
Acrolein	603, 624	107-02-8	100	< 100
Acrylonitrile	603, 624	107-13-1	100	< 100
Benzene	624	71-43-2	10	< 10
Bromodichloromethane	624	75-27-4	10	< 10
Bromoform	624	75-25-2	10	< 10
Bromomethane	624	74-83-9	10	< 10
Carbon Tetrachloride	624	56-23-5	10	< 10
Chlorobenzene	624	108-90-7	10	< 10
Chlorodibromomethane	624	124-48-1	10	< 10
Chloroethane	624	75-00-3	10	< 10
2-Chloroethyl vinyl ether	624	110-75-8	10	< 10
Chloroform	624	67-66-3	10	< 10
Chloromethane	624	74-87-3	10	< 10
Dichlorodifluoromethane	624	-	10	< 10
1,1-Dichloroethane	624	75-34-3	10	< 10
1,2-Dichloroethane	624	107-06-2	10	< 10
1,1-Dichloroethylene	624	75-35-4	10	< 10
trans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
1,2-Dichloropropane	624	78-87-5	10	< 10
1,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
Methylene Chloride	[redacted]			
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10

< = Less than, None detected

ACL

NEW YORK TESTING LABORATORIES, INC.

Sample: RO-50-01 (Continued) Lab No. 82-64452 (A-1

60'-62'

VOLATILE COMPOUNDS

Parameter (ug/l)	Method No.	CAS No.	Detection Limit (ug/l)	Found (ug/l)
~~Carbon Disulfide~~	-	-	-	Present
Pentane	-	-	-	Present
Methylcyclopentane	-	-	-	Present
3-methylpentane	-	-	-	Present
2-methylpentane	-	-	-	Present
Hexane	-	-	-	Present
2,4-dimethyl-3-pentanone	-	-	-	Present

Water Quality Data From the
Suffolk County Water Authority Well Field,
Quogue, New York

Source: SCWA, 1986

NYS WELL NO.* S-64716
WELL LOCATION* MEETINGHOUSE RD SUCT.

SAMPLE DATE* 10/08/1985
RUN TIME IN HRS* .5
ENTRY I.D.* C85C
TCOLI-MF/100ML* <1
TURBIDITY-NTU* .51
PH* 6.5
TOTAL DISS. SOLIDS CALC. MG/L-TDS* 73.
SPEC. COND. UMHO/CM* 114.
FREE AMMONIA MG/L-N* .92
NITRITE MG/L-N* <.01
NITRATE MG/L-N* .15
CHLORIDE MG/L-CL* 7.0
SURFACTANTS MG/L-MBAS* <.02
TOTAL HARDNESS MG/L-CACO3* 42.
TOTAL ALKALINITY MG/L-CACO3* 28.
FREE CO2 MG/L-CO2-NOMO* 14.0
SULFATES MG/L-SO4* 14.7
TOTAL PHOS. MG/L-P* <.10
IRON MG/L-FE* <.03
MANGANESE MG/L-MG* .02
COPPER MG/L-CU* <.02
ZINC MG/L-ZN* <.02
SODIUM MG/L-NA* 5.3
POTASSIUM MG/L-K* .74
CALCIUM MG/L-CA* 13.4
MAGNESIUM MG/L-MG* 2.05
ARSENIC UG/L-AS* <5.0
SILVER UG/L-AG* <2.50
BARIUM UG/L-BA* <50.00
CATION SUM ME/L* 1.09
ANION SUM ME/L* 1.14

NYS WELL NO.* S-64716
WELL LOCATION* MEETINGHOUSE RD SUCT.

SAMPLE DATE* 10/08/1985
RUN TIME IN HRS* .5
ENTRY I.D.* C850
CHLOROMETHANE UG/L* <3.
BROMOMETHANE UG/L* <3.
BENZENE UG/L* <1.
TOLUENE UG/L* <1.
M-XYLENE UG/L* <1.
P-XYLENE UG/L* <1.
O-XYLENE UG/L* <1.
DICHLORODIFLUOROMETHANE* <3.
CHLOROBENZENE UG/L* <3.
ETHYLBENZENE UG/L* <1.
CHLOROETHANE* <3.
1 1 2 2 TETRACHLOROETHANE UG/L* <3.
CHLOROFORM UG/L* <1.
BROMOFORM UG/L* <6.
BROMODICHLOROMETHANE UG/L* <4.
CHLORODIBROMOMETHANE UG/L* <3.
CARBON TETRACHLORIDE UG/L* <1.
METHYLENE CHLORIDE UG/L* <3.
VINYL CHLORIDE UG/L* <3.0
1 1 DICHLOROETHYLENE UG/L* <3.
CIS 1 2 DICHLOROETHYLENE UG/L* <3.
TRANS 1 2 DICHLOROETHYLENE UG/L* <3.
TRICHLOROETHYLENE UG/L* <1.
TETRACHLOROETHYLENE UG/L* <1.
1 1 1 TRICHLOROETHANE UG/L* <1.
1 1 2 TRICHLOROETHANE UG/L* <3.
1 1 DICHLOROETHANE UG/L* <3.
1 2 DICHLOROETHANE UG/L* <2.
1 2-DICHLOROPROPANE UG/L* <3.
TRANS 1 3-DICHLOROPROPENE* <3.
CIS 1 3-DICHLOROPROPENE* <3.
META-DICHLOROBENZENE* <1.
ORTHO-DICHLOROBENZENE UG/L* <1.
PARA-DICHLOROBENZENE UG/L* <1.
TRICHLOROFLUOROMETHANE* <3.
2-CHLOROETHYL VINYL ETHER* <3.

NYS WELL NO.* S-20688
WELL LOCATION* MEETINGHOUSE RD #20

SAMPLE DATE* 05/14/1985
RUN TIME IN HRS* 25.0
ENTRY I.D.* B85C
TCOLI-MF/100ML* <1
TURBIDITY-NTU* .35
PH* 6.0
TOTAL DISS. SOLIDS CALC. MG/L-TDS* 51.
SPEC. COND. UMHO/CM* 71.
FREE AMMONIA MG/L-N* .32
NITRITE MG/L-N* .01
NITRATE MG/L-N* 1.08
CHLORIDE MG/L-CL* 6.0
SURFACTANTS MG/L-MBAS* <.02
TOTAL HARDNESS MG/L-CACO3* 22.
TOTAL ALKALINITY MG/L-CACO3* 12.
FREE CO2 MG/L-CO2-NOMO* 19.0
SULFATES MG/L-SO4* 11.2
TOTAL PHOS. MG/L-P* .30
ORTHO PHOS. MG/L-P* .24
FLUORIDE MG/L-F* <.10
IRON MG/L-FE* <.03
MANGANESE MG/L-MG* .05
COPPER MG/L-CU* <.02
ZINC MG/L-ZN* <.02
SODIUM MG/L-NA* 5.2
POTASSIUM MG/L-K* .70
CALCIUM MG/L-CA* 4.8
MAGNESIUM MG/L-MG* 2.01
LEAD UG/L-PB* <5.00
CATION SUM ME/L* .67
ANION SUM ME/L* .72

NYS WELL NO.* S-20688
WELL LOCATION* MEETINGHOUSE RD #20

SAMPLE DATE* 05/14/1985
RUN TIME IN HRS* 25.0
ENTRY I.D.* B850
CHLOROMETHANE UG/L* <3.
BROMOMETHANE UG/L* <3.
BENZENE UG/L* <1.
TOLUENE UG/L* <1.
M-XYLENE UG/L* <1.
P-XYLENE UG/L* <1.
O-XYLENE UG/L* <1.
DICHLORODIFLUOROMETHANE* <3.
CHLOROBENZENE UG/L* <3.
ETHYLBENZENE UG/L* <1.
CHLOROETHANE* <3.
1 1 2 2 TETRACHLOROETHANE UG/L* <3.
CHLOROFORM UG/L* <1.
BROMOFORM UG/L* <6.
BROMODICHLOROMETHANE UG/L* <4.
CHLORODIBROMOMETHANE UG/L* <3.
CARBON TETRACHLORIDE UG/L* <1.
METHYLENE CHLORIDE UG/L* <3.
VINYL CHLORIDE UG/L* <3.0
1 1 DICHLOROETHYLENE UG/L* <3.
CIS 1 2 DICHLOROETHYLENE UG/L* <3.
TRANS 1 2 DICHLOROETHYLENE UG/L* <3.
TRICHLOROETHYLENE UG/L* <1.
TETRACHLOROETHYLENE UG/L* <1.
1 1 1 TRICHLOROETHANE UG/L* <1.
1 1 2 TRICHLOROETHANE UG/L* <3.
1 1 DICHLOROETHANE UG/L* <3.
1 2 DICHLOROETHANE UG/L* <2.
1 2-DICHLOROPROPANE UG/L* <3.
TRANS 1 3-DICHLOROPROPENE* <3.
CIS 1 3-DICHLOROPROPENE* <3.
META-DICHLOROBENZENE* <1.
ORTHO-DICHLOROBENZENE UG/L* <1.
PARA-DICHLOROBENZENE UG/L* <1.
TRICHLOROFLUOROMETHANE* <3.
2-CHLOROETHYL VINYL ETHER* <3.

Water Quality Data From
Monitoring Wells Surrounding the
Fire Training Area
Suffolk County Airport,
Westhampton Beach, New York

Source: USAF, 1982.

JP-4 SCREEN/AROMATICS/HALOGENATED ORGANICS - SUFFOLK CTY ANGB, L.I. NY
File: SAMPLES 106NY 1
Report: Samples 106NY 1

BASE SAMPLE #	WELL #	DATE COLLECTED	JP-4 SCREEN	AROMATICS	H-A	H-B	H-C	H-D	H-E	H-F	H-G	H-H	H-I	H-J	H-K
GN820029	11	May 6 82	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820030	11	May 6 82	N/A	N/A	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	0.3	1.2	<0.1	<0.1	<0.1
GN820031	11	May 6 82	N/A	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820032	12	May 6 82	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820033	12	May 6 82	N/A	N/A	<0.2	<0.1	<0.1	4.6	<0.1	<0.2	0.3	3.5	1.9	170	30
GN820034	12	May 6 82	N/A	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820035	14	May 6 82	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820036	14	May 6 82	N/A	N/A	<0.2	<0.1	<0.1	0.3	<0.1	<0.2	0.5	0.4	755	0.8	<0.1
GN820037	14	May 6 82	N/A	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820038	10	May 6 82	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820039	10	May 6 82	N/A	N/A	<0.2	<0.1	<0.1	1.3	<0.1	<0.2	<0.2	1.3	1.7	0.6	<0.1
GN820040	10	May 6 82	N/A	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820041	09	May 6 82	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GN820042	09	May 6 82	N/A	N/A	<0.2	<0.1	<0.1	0.8	<0.1	<0.2	0.3	0.2	<0.1	0.2	<0.1
GN820043	09	May 6 82	N/A	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

JP-4 SCREEN:
0 = None found
1 = Jet A type fuel found √
2 = JP-4 type fuel found √
3 = Heating Oil or similar fuel
? = Unable to determine type fuel

HALOGENATED ORGANICS: Results in ug/l
H-A = Bromoform
H-B = Bromochloromethane
H-C = Carbon Tetrachloride
H-D = Chloroform
H-E = Dibromochloromethane
H-F = 1,2-Dichloroethane
H-G = Methylene Chloride
H-H = 1,1,2,2-Tetrachloroethylene
H-I = 1,1,1-Trichloroethane
H-J = Trichloroethylene
H-K = 1,2-Dichloroethylene

AROMATICS: Y = Showed GC pattern similar to JP-4 & Jet A. N = Did Not show GC pattern similar to JP-4 & Jet A.

VOLATILE HALOCARBONS - EPA 601 - SUFFOLK CTY ANGB,L.I.NY
File: SAMPLES 126NY 9
Report: Samples 126NY 8

BASE SAMPLE #	WELL #	DATE COLLECTED	VH-1	VH-2	VH-3	VH-4	VH-5	VH-6	VH-7
SN840011	09	Oct 30 84	ND	ND	ND	ND	ND	ND	ND
SN840012	03	Oct 30 84	0.5	ND	0.7	0.3	0.3	ND	ND
SN840013	12	Oct 30 84	ND	152	3.9	1.3	124	ND	ND
SN840015	14	Oct 30 84	ND	ND	3.5	127	0.3	0.7	ND

Legend for VH-# Columns: Volatile Halocarbons results in ug/l

VH-1: Chloroform
VH-2: trans-1,2-Dichloroethene
VH-3: Tetrachloroethylene
VH-4: 1,1,1-Trichloroethane
VH-5: Trichloroethylene
VH-6: Chlorobenzene
VH-7: Methylene Chloride

NOTE: The following additional parameters were analyzed with all results being less than the detection limit: Bromodichloromethane, Bromoform, Bromomethane, Carbon Tetrachloride, Chloroethane, 2-Chloroethylvinyl ether, Chloromethane, Dibromochloromethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloropropane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, Trichlorofluoromethane, and Vinyl Chloride.

NOTE: The samples were retained in holding by USAF OEHL for more than the allowable maximum of 14 days stipulated in EPA Method 601. The data should therefore be considered as "unreliable". Samples were collected on 29 and 30 Oct 84 and express shipped to OEHL, reaching there on 2 Nov 84. Samples were not analyzed until 5 Dec 84 due to OEHL equipment breakdowns. In addition to the above, the sample validity is in doubt due to questionable collection procedures of the [illegible] Contractor. As a result, this data should be retained for "historical purposes only" and should not be considered to be an accurate representation of existing ground water conditions.

NOTE: ND = None Detected, less than detection limit.

WELL WATER SAMPLE RESULTS - SUFFOLK CTY ANGB, L.I. NY
File: SAMPLES 106NY 2
Report: SAMPLES 106NY 2

BASE SAMPLE #	WELL #	DATE COLLECTED	O & G mg/l	NITRATES mg/l	SULFATES mg/l	TOT.ALK mg/l	CHLORIDE mg/l	MBAS mg/l	SPEC.COND. umhos/cm
6N820066	10	May 6 82	1.8	2.0	N/A	N/A	N/A	N/A	N/A
6N820067	10	May 6 82	N/A	N/A	15.0	24.0	4.0	0.1	116
6N820058	14	May 6 82	32.4	4.0	N/A	N/A	N/A	N/A	N/A
6N820059	14	May 6 82	N/A	N/A	12.0	56.0	16.0	0.2	170
6N820060	12	May 6 82	10.4	0.6	N/A	N/A	N/A	N/A	N/A
6N822061	12	May 6 82	N/A	N/A	21.0	84.0	<1.0	0.3	195
6N820062	11	May 6 82	0.9	2.0	N/A	N/A	N/A	N/A	N/A
6N820063	11	May 6 82	N/A	N/A	10.0	23.0	4.0	<0.1	93
6N820064	09	May 6 82	0.5	0.7	N/A	N/A	N/A	N/A	N/A
6N820065	09	May 6 82	N/A	N/A	12.0	17.0	8.0	<0.1	96
6N820135	23	Jun 10 82	1.30	0.4	N/A	N/A	N/A	N/A	N/A
6N820139	24	Jun 10 82	0.50	1.0	N/A	N/A	N/A	N/A	N/A
6N820141	22	Jun 10 82	1.10	0.8	N/A	N/A	N/A	N/A	N/A

Appendix E
Photographs

FIGURE E-1

SITE 1, RUNWAY DISPOSAL AREA

View from western slope looking east-southeast. Photograph taken August 5, 1986.

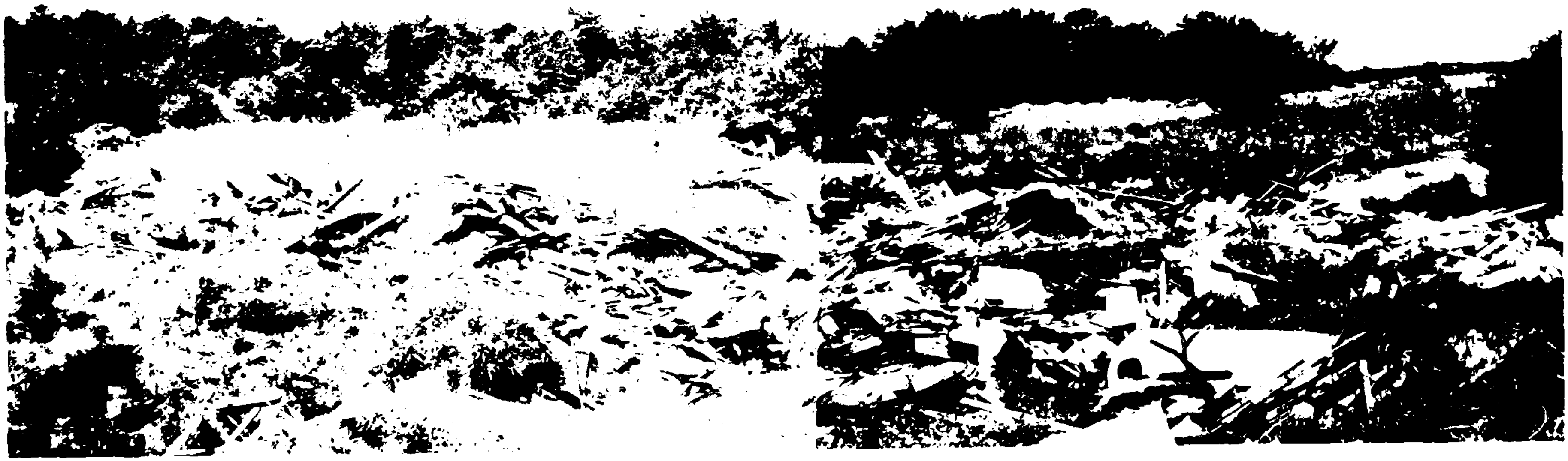


FIGURE E-2

SITE 1, RUNWAY DISPOSAL AREA

View from east-central area looking northwest. Photograph taken August 5, 1986.

FIGURE E-3
SITE 1, RUNWAY DISPOSAL AREA

View within central area looking east. Photograph taken August 5, 1986.

FIGURE E-4

SITE 1, RUNWAY DISPOSAL AREA

View from central area looking northwest. Photograph taken August 5, 1986.

FIGURE E-5
SITE 2, CANINE KENNEL LANDFILL

View from northeast corner looking southwest. Photograph taken August 5, 1986.

FIGURE E-6
SITE 2, CANINE KENNEL LANDFILL
View from east-central area looking west-northwest. Photograph taken August 5, 1986.

FIGURE E 7

SITE 2 CANINE KENNEL LANDFILL

View from southeast area looking northwest Photograph taken August 5 1986

Appendix F

Hazard Assessment Rating Methodology

USAF INSTALLATION RESTORATION PROGRAM

HAZARD ASSESSMENT RATING METHODOLOGY

BACKGROUND

The Department of Defense (DOD) has established a comprehensive program to identify, evaluate, and control problems associated with past disposal practices at DOD facilities. One of the actions required under this program is to:

> "develop and maintain a priority listing of contaminated installations and facilities for remedial action based on potential hazard to public health, welfare, and environmental impacts." (Reference: DEQPPM 81-5, 11 December 1981).

Accordingly, the United States Air Force (USAF) has sought to establish a system to set priorities for taking further actions at sites based upon information gathered during the Records Search phase of its Installation Restoration Program (IRP).

The first site rating model was developed in June 1981 at a meeting with representatives from USAF Occupational Environmental Health Laboratory (OEHL), Air Force Engineering Services Center (AFESC), Engineering-Science (ES) and CH_2M Hill. The basis for this model was a system developed for EPA by JRB Associates of McLean, Virginia. The JRB model was modified to meet Air Force needs.

After using this model for 6 months at over 20 Air Force installations, certain inadequacies became apparent. Therefore, on January 26 and 27, 1982, representatives of USAF OEHL, AFESC, various major commands, Engineering Science, and CH_2M Hill met to address the inadequacies. The result of the meeting was a new site rating model designed to present a better picture of the hazards posed by sites at Air Force installations. The new rating model described in this presentation is referred to as the Hazard Assessment Rating Methodology.

PURPOSE

The purpose of the site rating model is to provide a relative ranking of sites of suspected contamination from hazardous substances. This model will assist the Air Force in setting priorities for follow-on site investigations and confirmation work under Phase II of IRP.

This rating system is used only after it has been determined that (1) potential for contamination exists (hazardous wastes present in sufficient quantity), and (2) potential for migration exists. A site can be deleted from consideration for rating on either basis.

DESCRIPTION OF MODEL

Like the other hazardous waste site ranking models, the U.S. Air Force's site rating model uses a scoring system to rank sites for priority attention. However, in developing this model, the designers incorporated some special features to meet specific DOD program needs.

The model uses data readily obtained during the Record Search portion (Phase I) of the IRP. Scoring judgments and computations are easily made. In assessing the hazards at a given site, the model develops a score based on the most likely routes of contamination and the worst hazards at the site. Sites are given low scores only if there are clearly no hazards at the site. This approach meshes well with the policy for evaluating and setting restrictions on excess DOD properties.

As with the previous model, this model considers four aspects of the hazard posed by a specific site: the possible receptors of the contamination, the waste and its characteristics, potential pathways for waste contaminant migration, and any efforts to contain the contaminants. Each of these categories contains a number of rating factors that are used in the overall hazard rating.

The receptors category rating is calculated by scoring each factor, multiplying by a factor weighting constant and adding the weighted scores to obtain a total category score.

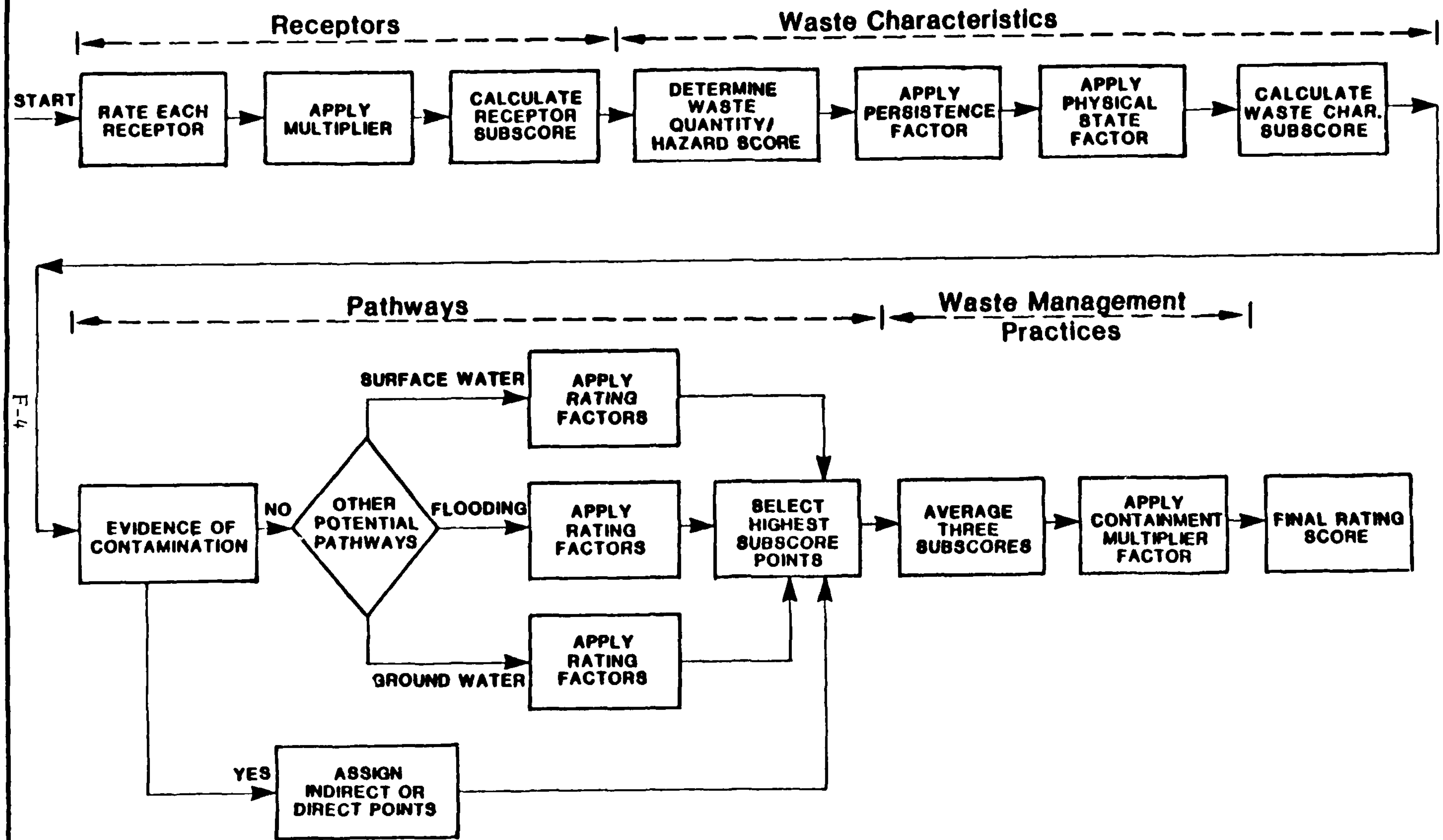
The pathways category rating is based on evidence of contaminant migration or an evaluation of the highest potential (worst case) for contaminant migration along one of three pathways. If evidence of contaminant migration exists, the category is given a subscore of 80 to 100 points. For indirect evidence, 80 points are assigned and for direct evidence 100 points are assigned. If no evidence is found, the highest score among three possible routes is used. These routes are surface water migration, flooding, and ground-water migration. Evaluation of each route involves factors associated with the particular migration route. The three pathways are evaluated and the highest score among all four of the potential scores is used.

The waste characteristics category is scored in three steps. First, a point rating is assigned based on an assessment of the waste quantity and the hazard (worst case) associated with the site. The level of confidence in the information is also factored into the assessment. Next, the score is multiplied by a waste persistence factor, which acts to reduce the score if the waste is not very persistent. Finally, the score is further modified by the physical state of the waste. Liquid wastes receive the maximum score, while scores for sludges and solids are reduced.

The scores for each of the three categories are then added together and normalized to a maximum possible score of 100. Then the waste management practice category is scored. Sites at which there is no containment are not reduced in score. Scores for sites with limited containment can be reduced by 5 percent. If a site is contained and well managed, its score can be reduced by 90 percent. The final site score is calculated by applying the waste managment practices category factor to the sum of the scores for the other three categories.

FIGURE 1

HAZARD ASSESSMENT RATING METHODOLOGY FLOW CHART



HAZARD ASSESSMENT RATING METHODOLOGY GUIDELINES

I. RECEPTORS CATEGORY

Rating Factors	Rating Scale Levels: 0	1	2	3	Multiplier
A. Population within 1,000 feet (includes on-base facilities)	0	1 - 25	26 - 100	Greater than 100	4
B. Distance to nearest water well	Greater than 3 miles	1 to 3 miles	3,001 feet to 1 mile	0 to 3,000 feet	10
C. Land Use/Zoning (within 1 mile radius)	Completely remote (zoning not applicable)	Agricultural	Commercial or industrial	Residential	3
D. Distance to installation boundary	Greater than 2 miles	1 to 2 miles	1,001 feet to 1 mile	0 to 1,000 feet	6
E. Critical environments (within 1 mile radius)	Not a critical environment	Natural areas	Pristine natural areas; minor wetlands; preserved areas; presence of economically important natural resources susceptible to contamination.	Major habitat of an endangered or threatened species; presence of recharge area; major wetlands.	10
F. Water quality/use designation of nearest surface water body	Agricultural or industrial use.	Recreation, propagation and management of fish and wildlife.	Shellfish propagation and harvesting.	Potable water supplies	6
G. Ground-Water use of uppermost aquifer	Not used, other sources readily available.	Commercial, industrial, or irrigation, very limited other water sources.	Drinking water, municipal water available.	Drinking water, no municipal water available; commercial, industrial, or irrigation, no other water source available.	9
H. Population served by surface water supplies within 3 miles downstream of site	0	1 - 50	51 - 1,000	Greater than 1,000	6
I. Population served by aquifer supplies within 3 miles of site	0	1 - 50	51 - 1,000	Greater than 1, 000	6

II. WASTE CHARACTERISTICS (Continued)

Waste Characteristics Matrix

Point Rating	Hazardous Waste Quantity	Confidence Level of Information	Hazard Rating
100	L	C	H
80	L	C	M
	M	C	H
70	L	S	H
60	S	C	H
	M	C	M
50	L	S	M
	L	C	L
	M	S	H
	S	C	M
40	S	S	H
	M	S	M
	M	C	L
	L	S	L
30	S	C	L
	M	S	L
	S	S	M
20	S	S	L

Notes:
For a site with more than one hazardous waste, the waste quantities may be added using the following rules:
Confidence Level
- o Confirmed confidence levels (C) can be added
- o Suspected confidence levels (S) can be added
- o Confirmed confidence levels cannot be added with suspected confidence levels

Waste Hazard Rating
- o Wastes with the same hazard rating can be added
- o Wastes with different hazard ratings can only be added in a downgrade mode, e.g., MCM + SCH = LCM if the total quantity is greater than 20 tons.

Example: Several wastes may be present at a site, each having an MCM designation (60 points). By adding the quantities of each waste, the designation may change to LCM (80 points). In this case, the correct point rating for the waste is 80.

B. Persistence Multiplier for Point Rating

Persistence Criteria	Multiply Point Rating From Part A by the Following
Metals, polycyclic compounds, and halogenated hydrocarbons	1.0
Substituted and other ring compounds	0.9
Straight chain hydrocarbons	0.8
Easily biodegradable compounds	0.4

C. Physical State Multiplier

Physical State	Multiply Point Total From Parts A and B by the Following
Liquid	1.0
Sludge	0.75
Solid	0.50

HAZARD ASSESSMENT RATING METHODOLOGY GUIDELINES

III. PATHWAYS CATEGORY

A. Evidence of Contamination

Direct evidence is obtained from laboratory analyses of hazardous contaminants present above natural background levels in surface water, ground water, or air. Evidence should confirm that the source of contamination is the site being evaluated.

Indirect evidence might be from visual observation (i.e., leachate), vegetation stress, sludge deposits, presence of taste and odors in drinking water, or reported discharges that cannot be directly confirmed as resulting from the site, but the site is greatly suspected of being a source of contamination.

B-1 POTENTIAL FOR SURFACE WATER CONTAMINATION

Rating Factor	Rating Scale Levels 0	1	2	3	Multiplier
Distance to nearest surface water (includes drainage ditches and storm sewers)	Greater than 1 mile	2,001 feet to 1 mile	501 feet to 2,000 feet	0 to 500 feet	8
Net precipitation	Less than -10 in.	-10 to + 5 in.	+5 to +20 in.	Greater than +20 in.	6
Surface erosion	None	Slight	Moderate	Severe	8
Surface permeability	0% to 15% clay ($>10^{-2}$ cm/sec)	15% to 30% clay (10^{-2} to 10^{-4} cm/sec)	30% to 50% clay (10^{-4} to 10^{-6} cm/sec)	Greater than 50% clay ($<10^{-6}$ cm/sec)	6
Rainfall intensity based on 1 year 24-hr rainfall	<1.0 inch	1.0-2.0 inches	2.1-3.0 inches	>3.0 inches	8

B-2 POTENTIAL FOR FLOODING

Floodplain	Beyond 100-year floodplain	In 25-year floodplain	In 10-year floodplain	Floods annually	1

B-3 POTENTIAL FOR GROUND-WATER CONTAMINATION

Depth to ground water	Greater than 500 ft	50 to 500 feet	11 to 50 feet	0 to 10 feet	8
Net precipitation	Less than -10 in.	-10 to +5 in.	+5 to +20 in.	Greater than +20 in.	6
Soil permeability	Greater than 50% clay ($>10^{-6}$ cm/sec)	30% to 50% clay (10^{-4} to 10^{-6} cm/sec)	15% to 30% clay (10^{-2} to 10^{-4} cm/sec)	0% to 15% clay ($<10^{-2}$ cm/sec)	8
Subsurface flows	Bottom of site greater than 5 feet above high ground-water level	Bottom of site occasionally submerged	Bottom of site frequently submerged	Bottom of site located below mean ground-water level	8
Direct access to ground water (through faults, fractures, faulty well casings, subsidence fissures, etc.)	No evidence of risk	Low risk	Moderate risk	High risk	8

HAZARD ASSESSMENT RATING METHODOLOGY GUIDELINES

IV. WASTE MANAGEMENT PRACTICES CATEGORY

A. This category adjusts the total risk as determined from the receptors, pathways, and waste characteristics categories for waste management practices and engineering controls designed to reduce this risk. The total risk is determined by first averaging the receptors, pathways, and waste characteristics subscores.

B. WASTE MANAGEMENT PRACTICES FACTOR

The following multipliers are then applied to the total risk points (from A):

Waste Management Practice	Multiplier
No containment	1.0
Limited containment	0.95
Fully contained and in full compliance	0.10

Guidelines for fully contained:

Landfills:

- o Clay cap or other impermeable cover
- o Leachate collection system
- o Liners in good condition
- o Adequate monitoring wells

Spills:

- o Quick spill cleanup action taken
- o Contaminated soil removed
- o Soil and/or water samples confirm total cleanup of the spill

Surface Impoundments:

- o Liners in good condition
- o Sound dikes and adequate freeboard
- o Adequate monitoring wells

Fire Proection Training Areas:

- o Concrete surface and berms
- o Oil/water separator for pretreatment of runoff
- o Effluent from oil/water separator to treatment plant

General Note: If data are not available or known to be complete the factor ratings under items I-A through I, III-B-1 or III-B-3, then leave blank for calculation of factor score and maximum possible score.

HAZARD ASSESSMENT RATING METHODOLOGY GUIDELINES

II. WASTE CHARACTERISTICS

A-1 Hazardous Waste Quantity

S = Small quantity (<5 tons or 20 drums of liquid)
M = Moderate quantity (5 to 20 tons or 21 to 85 drums of liquid)
L = Large quantity (>20 tons or 85 drums of liquid)

A-2 Confidence Level of Information

C = Confirmed confidence level (minimum criteria below)

- o Verbal reports from interviewer (at least 2) or written information from the records.
- o Knowledge of types and quantities of wastes generated by shops and other areas on base.
- o Based on the above, a determination of the types and quantities of waste disposed of at the site.

S = Suspected confidence level

- o No verbal reports or conflicting verbal reports and no written information from the records.
- o Logic based on a knowledge of the types and quantities of hazardous wastes generated at the base, and a history of past waste disposal practices indicate that these wastes were disposed of at a site.

A-3 Hazard Rating

Hazard Category	Rating Scale Levels: 0	1	2	3
Toxicity	Sax's Level 0	Sax's Level 1	Sax's Level 2	Sax's Level 3
Ignitability	Flash point greater than 200°F	Flash point at 140°F to 200°F	Flash point at 80°F to 140°F	Flash point less than 80°F
Radioactivity	At or below background levels	1 to 3 times background levels	3 to 5 times background levels	Over 5 times background levels

Use the highest individual rating based on toxicity, ignitability and radioactivity and determine the hazard rating.

Hazard Rating	Points
High (H)	3
Medium (M)	2
Low (L)	1

HAZARD ASSESSMENT RATING METHODOLOGY FORM

NAME OF SITE ____________________

LOCATION ____________________

DATE OF OPERATION OR OCCURRENCE ____________________

OWNER/OPERATOR ____________________

COMMENTS/DESCRIPTION ____________________

SITE RATED BY ____________________

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site		4		
B. Distance to nearest well		10		
C. Land use/zoning within 1 mile radius		3		
D. Distance to reservation boundary		6		
E. Critical environments within 1 mile radius of site		10		
F. Water quality of nearest surface water body		6		
G. Ground water use of uppermost aquifer		9		
H. Population served by surface water supply within 3 miles downstream of site		6		
I. Population served by ground-water supply within 3 miles of site		6		
		Subtotals	______	______

Receptors subscore (100 X factor score subtotal/maximum score subtotal) ______

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) ______
2. Confidence level (C = confirmed, S = suspected) ______
3. Hazard rating (H = high, M = medium, L = low) ______

Factor Subscore A (from 20 to 100 based on factor score matrix) ______

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

______ X ______ = ______

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

______ X ______ = ______

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water		8		
Net precipitation		6		
Surface erosion		8		
Surface permeability		6		
Rainfall intensity		8		
Subtotals			______	______

Subscore (100 X factor score subtotal/maximum score subtotal) ______

2. Flooding

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Flooding		1		

Subscore (100 x factor score/3) ______

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water		8		
Net precipitation		6		
Soil permeability		8		
Subsurface flows		8		
Direct access to ground water		8		
Subtotals			______	______

Subscore (100 x factor score subtotal/maximum score subtotal) ______

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore ______

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors ______
Waste Characteristics ______
Pathways ______

Total ______ divided by 3 = ______
Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

______ X ______ = ☐

Appendix G
Site Harm Rating Forms

HAZARD ASSESSMENT RATING METHODOLOGY FORM

NAME OF SITE Site 1, Runway Disposal Area

LOCATION Suffolk County Airport

DATE OF OPERATION OR OCCURRENCE 1951 - 1982

OWNER/OPERATOR Suffolk County

COMMENTS/DESCRIPTION Used by SCAFB, Suffolk County and ANGB

SITE RATED BY GEW/MJM/WML - Dames & Moore

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	1	4	4	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	2	3	6	9
D. Distance to reservation boundary	3	6	18	18
E. Critical environments within 1 mile radius of site	3	10	30	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	3	6	18	18
		Subtotals	139	180

Receptors subscore (100 X factor score subtotal/maximum score subtotal) 77

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) S
3. Hazard rating (H = high, M = medium, L = low) M

Factor Subscore A (from 20 to 100 based on factor score matrix) 30

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

30 x 1.0 = 30

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

30 x 1.0 = 30

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water	3	8	24	24
Net precipitation	2	6	12	18
Surface erosion	2	8	16	24
Surface permeability	0	6	0	18
Rainfall intensity	0	8	0	24
		Subtotals	52	108

Subscore (100 X factor score subtotal/maximum score subtotal) 48

2. Flooding

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Flooding	0	1	0	3

Subscore (100 x factor score/3) 0

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water	2	8	16	24
Net precipitation	2	6	12	18
Soil permeability	3	8	24	24
Subsurface flows	0	8	0	24
Direct access to ground water	0	8	0	24
		Subtotals	52	114

Subscore (100 x factor score subtotal/maximum score subtotal) 46

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 48

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	77
Waste Characteristics	30
Pathways	48

Total 155 divided by 3 = 52 Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

52 x 1.0 = 52

HAZARD ASSESSMENT RATING METHODOLOGY FORM

NAME OF SITE Site 2, Canine Kennel Landfill

LOCATION Suffolk County Airport

DATE OF OPERATION OR OCCURRENCE 1970 - 1984

OWNER/OPERATOR Suffolk County

COMMENTS/DESCRIPTION

SITE RATED BY GEW/WML - Dames & Moore

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	1	4	4	12
B. Distance to nearest well	2	10	20	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to reservation boundary	3	6	18	18
E. Critical environments within 1 mile radius of site	3	10	30	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	3	6	18	18
Subtotals			132	180

Receptors subscore (100 X factor score subtotal/maximum score subtotal) 73

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) M

Factor Subscore A (from 20 to 100 based on factor score matrix) 50

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

50 x 1.0 = 50

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

50 x 1.0 = 50

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water	2	8	16	24
Net precipitation	2	6	12	18
Surface erosion	3	8	24	24
Surface permeability	0	6	0	18
Rainfall intensity	0	8	0	24
Subtotals			52	108

Subscore (100 X factor score subtotal/maximum score subtotal) 48

2. Flooding

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Flooding	0	1	0	

Subscore (100 x factor score/3) 0

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water	2	8	16	24
Net precipitation	2	6	12	18
Soil permeability	3	8	24	24
Subsurface flows	0	8	0	24
Direct access to ground water	0	8	0	24
Subtotals			52	114

Subscore (100 x factor score subtotal/maximum score subtotal) 46

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 48

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors 73
Waste Characteristics 50
Pathways 48

Total 171 divided by 3 = 57
Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

57 x 1.0 = 57

Appendix H
Acronyms/Abbreviations

ACRONYMS/ABBREVIATIONS

AF	Air Force
AFB	Air Force Base
ANG	Air National Guard
ANGB	Air National Guard Base
ARAMCO	Arabian American Oil Company
ARRG	Aerospace Rescue and Recovery Group
BOMARC	Boeing IM-99
C	Surface water classification; suitable for fishing
CAA	Civil Aeronautical Authority
CERCLA	Comprehensive Environmental Resource Conservation Liability Act
D	Surface water classification; drainage
DEQPPM	Department Environmental Quality Program Policy Memorandum (USDOD)
DEV/LEEV	Director of Engineering and Services, Environmental Division Headquarters United States Air Force
DOD	Department of Defense
DPDO	Defense Property Disposal Office
DRMO	Defense Reutilization Marketing Office
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency (USEPA)
FIS	Fighter Interceptor Squadron
FIW	Fighter Interceptor Wing
FTA	Fire Training Area
gpm	Gallons per minute
HARM	Hazard Assessment Rating Methodology
IRP	Installation Restoration Program
JP-4	Jet fuel

MAJCOM	Major Command
MEK	Methyl ethyl ketone
mgd	Million gallons per day
MIK	Methyl isopropyl ketone
msl	Mean sea level
NYDEC	New York Department of Environmental Conservation
OSC	Open Space Conservation
PCB	Polychlorinated biphenyls
PERC	Perchloroethylene
POL	Petroleum, oils, and lubricants
RCRA	Resource Conservation and Recovery Act
SA	Surface-water classification; tidal saltwater suitable for shell fishing, fishing, and bathing
SC	Surface-water classification; tidal saltwater suitable for fishing and fish propagation
SCA	Suffolk County Airport
SCAFB	Suffolk County Air Force Base
TCE	Trichloroethylene
USAF	United States Air Force
USGS	United States Geological Survey
WBAAF	Westhampton Beach Army Airfield

ADDENDUM

U.S. AIR FORCE
INSTALLATION RESTORATION PROGRAM
PHASE I - RECORDS SEARCH
FOR
SUFFOLK COUNTY AIR FORCE BASE (RETIRED)
SUFFOLK COUNTY AIRPORT
WESTHAMPTON BEACH, NEW YORK

September 1987

prepared by

DAMES & MOORE

submitted by

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
OAK RIDGE NATIONAL LABORATORY
operated by
MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under Contract No. DE-AC05-840R21400

submitted to

HQ U.S. AIR FORCE LEEV
Bolling AFB, Washington, D.C.
under Interagency Agreement #40-1489-84

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I. INTRODUCTION

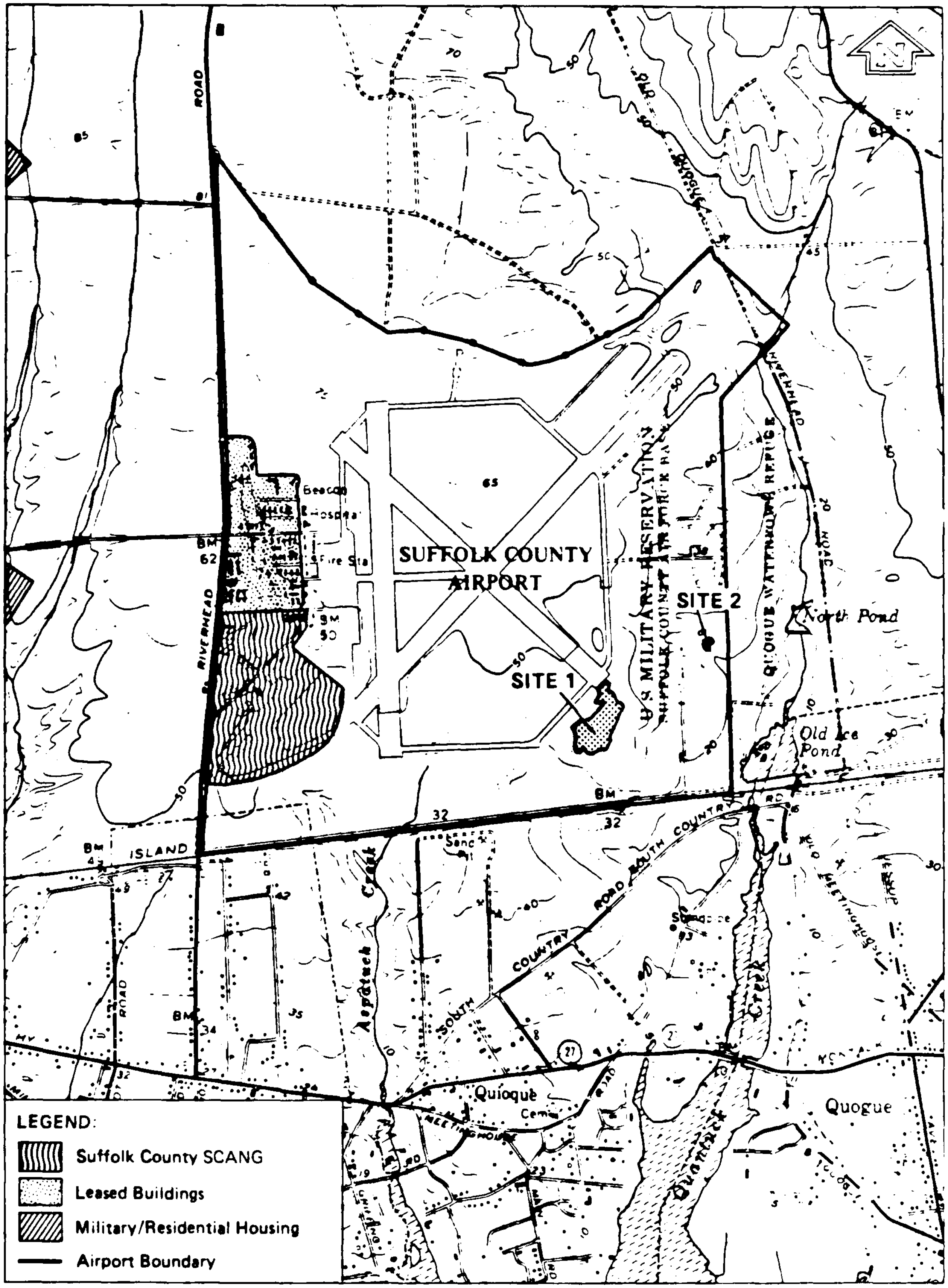
I.A BACKGROUND

As part of the Installation Restoration Program (IRP), two sites have been identified for investigation at the Suffolk County Airport (SCA)--formerly Suffolk County Air Force Base (SCAFB), Westhampton Beach, New York. The Installation Assessment for these sites was initiated in August 1986 with a records search and review and site reconnaissance of the two sites of concern and of other pertinent areas of the former SCAFB. During the data collection process, major emphasis was placed on investigation of past operations and disposal practices of the former SCAFB. The results of the Installation Assessment were initially presented in a draft version of the main section of this report. The draft report was then reviewed by ORNL, USAF, and appropriate regulatory agencies. Subsequent to this review, Dames & Moore was requested to complete further investigations to determine the role of the Air National Guard (ANG) in the use of the two sites of concern. The ANG located at Suffolk County Airport (referred to as ANGB in the main report and hereafter referred to as SCANG) leased a portion of the airport and became tenants of a portion of the former SCAFB in 1971. The SCANG occupies 70 acres of building sites and aircraft working area as identified in Figure AD-1. Due to ANG presence at SCA since 1971, its role as SCA tenants, its known use of one of the sites of concern, and its location with respect to the two sites of concern, the USAF considered it appropriate to investigate SCANG's past waste generation, handling, and disposal activities, especially with respect to the two sites of concern.

I.B PURPOSE

The purpose of the IRP is to search for, identify, and assess actual or potential contaminant migration from past DOD disposal sites and ensure that remedial actions to correct environmental hazards related to past disposal practices are implemented in a timely and cost-effective manner.

This report contains a summary and an evaluation of the information collected during Phase I activities of the IRP conducted at the SCANG by Dames & Moore in



INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach,
New York

FIGURE AD-1
MAP OF SUFFOLK
COUNTY AIRPORT

0 2000
Scale in Feet

Reference U.S.G.S. Topos 7½ series
Eastport N.Y. 1956 Quogue N.Y. 1956

June 1987. This information supplements the findings presented in the main section of this report and presents greater detail relative to SCANG activities with respect to the two sites of concern. A separate Phase I study of SCANG (excluding the sites of concern) was previously conducted by HMTC (HMTC, 1987).

I.D SCOPE

The goal of this Phase I of the IRP is to identify the potential for environmental contamination from past waste disposal practices at two disposal areas located at SCA and to assess the probability of contaminant migration beyond the former installation boundaries. The scope of this addendum report is limited to ANG's role in the use of two sites (identified in previous chapters of the main report as Site 1, Runway Disposal Area, and Site 2, Canine Kennel Landfill), although the records search associated with this study encompassed the entire ANG facility to collect pertinent information relative to these two sites. The main report focused primarily on the use of the two sites of concern by the former SCAFB. Information contained in the main report concerning use of the sites subsequent to SCAFB closeout was based on data collected in August 1986 during completion of Phase I activities related to the former SCAFB. Subsequently, a more detailed investigation was undertaken to evaluate ANG's role in the use of the two sites. The activities undertaken in the follow-up Phase I for ANG included the following:

- Review of available SCANG records;
- Visit to SCANG;
- Interview of key SCANG personnel familiar with past waste generation, handling, and disposal practices at SCANG;
- Review and analysis of all information obtained; and,
- Preparation of an addendum report, and revision of pertinent sections of the draft version of the main section of this report including the Executive Summary.

The on-site portion of the records search for SCANG was conducted from June 3-5, 1987. During this period, interviews were conducted with current key SCANG personnel (Appendix A). A site reconnaissance was conducted at the two sites of concern and other pertinent areas of SCANG.

The following core team of professionals was assembled for performing the tasks associated with this addendum report:

- R. C. Tucker, Program Manager;
- G. E. Wood, Environmental Engineer and Project Manager;
- M. J. McCann, Chemical Engineer; and,
- A. J. Duda, Hydrogeologist.

The Project Manager and Chemical Engineer performed the on-site visit and conducted the interviews at SCANG. The resumes of the team members are provided in Appendix A of the main report.

I.D METHODOLOGY

Available base records pertinent to the installation's past missions, industrial processes, waste disposal practices, and known environmental contamination were identified and reviewed, past operations and disposal practices were investigated during the on-site visit. Long-term employees from The 106th Aerospace Rescue and Recovery Group (ARRG) located at the SCANG were interviewed.

Interviewee information is provided in Appendix A of this addendum report. The on-site visit and interviews were conducted from June 3-5, 1987; information in this addendum report is current as of those dates. Information obtained from interviews was verified by data from other sources, where possible, before inclusion in this report.

With information collected during this study, the previous Hazard Assessment Ranking Methodology (HARM) ratings (presented in the main report) were reviewed and reevaluated to determine whether the additional information collected warranted modification of these scores.

The results of the Phase I activities for SCANG are presented in this addendum report. Chapters II and III present significant findings and conclusions. In this addendum, the bibliography follows the report, preceding the addendum appendices. General installation and site information, environmental setting data, HARM information, and recommendations are provided in the main report.

II. FINDINGS

II.A INTRODUCTION/HISTORY

The 106th Aerospace Rescue and Recovery Group (ARRG) of the ANG occupies an area located south of Cook Street on the western side of SCA.

This airport is located on Riverhead Road approximately 2 miles north of Westhampton Beach, New York, on Long Island. The airport, including approximately 70 acres of hangars and maintenance areas leased by ANG was formerly SCAFB.

The ANG became tenants of a portion of the SCA in 1971. The 106th ARRG currently operates SCANG, with the present mission one of aerospace rescue and recovery.

The 102nd Air Refueling Squadron utilizing KC-97 tankers for air-to-air refueling was relocated, together with the Group and Wing, to SCA in 1971. This resulted from a decision by the DOD to close Floyd Bennett Field in Brooklyn, New York. On December 2, 1972, the 102nd Air Refueling Squadron and its parent units, the 106th Air Refueling Group and the 106th Air Refueling Wing, were officially converted to an Aerospace Defense mission. The 102nd was designated the 102nd Fighter Interceptor Squadron and its parent units were the 106th Fighter Interceptor Group and 106th Fighter Inceptor Wing. With the conversion in 1972, the KC-97 tankers were replaced with F-102 fighter interceptors. On June 14, 1975 the unit went through another conversion to its present mission of rescue and recovery. The fighters were replaced with HH-3 helicopters and HC-130 fixed wing aircraft. The 106th ARRG currently possesses and operates four HC-130 aircraft and five HH-3 Jolly Green Giant helicopters. The U.S. Coast Guard frequently coordinates rescue and recovery operations with the SCANG.

The SCANG currently employs approximately 200 full-time personnel and 700 weekend personnel.

II.B WASTE GENERATION, HANDLING, AND DISPOSAL

Most of the information concerning waste generation, handling, and disposal at SCANG was obtained during interviews with current guard members conducted on walk-through tours of the shops and maintenance areas. Quantities of materials

used by each shop were obtained from a hazardous chemical data base developed by the base bioenvironmental engineering technician. Information contained in the final draft report of the Phase I Records Search for the SCANG (HMTC, 1987) was also used to identify past handling and disposal methods for a number of waste streams.

The wastes generated by the SCANG can be primarily grouped into five major categories:

- Spent solvents (primarily PD-680);
- Spent/recovered POL products;
- Battery acids;
- Paints, adhesives and epoxies; and,
- General refuse/trash.

These categories and the quantities of waste generated at SCANG have not changed significantly in the 16 years the base has operated. This is due to the fact that although the number of aircraft at SCANG decreased with the change in missions in 1975, the total number of aircraft engines to be maintained has remained relatively constant since 1971.

Waste disposal practices have also changed little since the early 1970s. Spent solvents and waste POL products have been routinely collected and disposed of off-base through either private contracts for disposal (1971-1982) or through the Defense Reutilization and Marketing Office (DRMO) (1983-present). Empty paint cans and empty adhesive and epoxy containers have typically been disposed of with the general trash in the base dumpsters. Some solvents have also been disposed of on rages discarded in the general trash. Waste battery acids that were previously disposed of on-base in the base's cesspool system are currently neutralized and disposed of through DRMO. Refuse collection and disposal have been handled through an outside contractor since the base opened in 1971.

Table AD-1 lists the hazardous materials used and wastes generated at SCANG on a shop-by-shop basis. It includes an estimate of annual quantities used/generated by each shop and the method of treatment, storage, or disposal for each waste stream since 1971. The quantities of the materials used by each shop

Table AD-1

Waste Generation/Handling/Disposal Information

Shop Name	Building No.	Hazardous Materials/Wastes[a]	Estimated Maximum Annual Quantities Material Used	Estimated Maximum Annual Quantities Wastes Generated	Method of Treatment/Storage/Disposal (1971 — 1982 — 1987)
Vehicle Maintenance (Motor Pool)	230	Paints, primers	400 gal	Empty containers, brushes	Dumpster/contract
		Thinners, paint removers	3 gal	1 gal	Dumpster/contract
		Solvents (methanol, MEK)	50 gal	50 gal	Floor Drain/Contract — DRMO
		Lubricants	4 gal	Empty containers	Dumpster/contract
		Fuel additives, starting fluids	32 gal	Empty containers	Dumpster/contract
		Battery acid	--	20 gal	Contract — DRMO
		Engine oil	--	150 gal	Contract — DRMO
Aerospace Ground Support Equipment (AGE) Maintenance	276	Paints	84 gal	Empty containers, brushes	Dumpster/contract
		Paints, lacquers (spray)	1700 12-oz cans	Empty containers	Dumpster/contract
		Adhesives, epoxies	3 gal	Empty containers	Dumpster/contract
		POLs	13,000 gal	500 gal	Contract — DRMO
		Solvents (cleaning compound methanol, MEK)	720 gal	660 gal	Contract — DRMO
		Hydraulic fluids	30 gal	20-30 gal	Contract — DRMO
		Thinners	48 gal	20 gal	Contract — DRMO
		Sulfuric acid	24 gal	24 gal	Cesspool — Neutralized/DRMO
Environmental Shop (Aircraft)	358	Paints (spray)	5 gal	Empty containers	Dumpster/contract
		POLs	3 gal	Empty containers, rags	Dumpster/contract
		Solvents (alcohol, TCA)	10 gal	Empty containers, rags	Dumpster and Contract/DRMO
Structural Repair (Sheet Metal Shop) (Aircraft)	358	Paints	3 gal	Empty containers, brushes	Dumpster/contract
		Resins	9 gal	Empty containers	Dumpster/contract
		Adhesives, epoxies	8 gal	Empty containers	Dumpster/contract
		POLs (spray)	2 gal	Empty containers, rags	Dumpster/contract
		Solvents	22 gal	22 gal, rags	Contract — DRMO
Machine Shop (Aircraft)	358	Paints, lacquers, (spray)	112 12-oz cans	Empty containers	Dumpster/contract
		Adhesives	6 oz	Empty containers	Dumpster/contract
		POLs	5.5 gal	Empty containers	Dumpster/contract
		Solvents (spray)	72 12-oz cans	Empty containers, rags	Dumpster/contract
Pneudraulics	358	Paints	8 gal	Empty containers, brushes	Dumpster/contract
		Paints (spray)	48 12-oz cans	Empty containers	Dumpster/contract
		Adhesives, epoxies, sealants	2 gal	Empty containers	Dumpster/contract
		POLs	3 gal	Empty containers, rags	Dumpster/contract
		Hydraulic fluids	30 gal	20-30 gal	Contract — DRMO
		Solvents (TCA, stoddard Solvent, PD-680)	200 gal	200 gal	Floor Drain/Contract — DRMO
		Asbestos, fire sleeve	200 feet	200 feet (bagged)	Dumpster — DRMO

Table AD-1 (Cont'd)

Shop Name	Building No.	Hazardous Materials/Wastes[a]	Estimated Maximum Annual Quantities Material Used	Estimated Maximum Annual Quantities Wastes Generated	Method of Treatment/Storage/Disposal 1971 – 1982 – 1987
Engine Shop (Aircraft)	264	POLs	Unknown	Unknown	
		Solvents	Unknown	Unknown	
		Paints (spray)	240 12-oz cans	Empty containers	Dumpster/contract
		Adhesives	24 oz	Empty containers	Dumpster/contract
		Lubricants	80 1-lb cans	Empty containers, rags	Dumpster/contract
Electric Shop (Battery Shop)	358	Lubricants	72 1-lb cans	Empty containers, rags	Dumpster/contract
		Sulfuric acid	48 gal	48 gal	Cesspool → Neutralized/DRMO
		Batteries, spent lead/acid	--	2-4 batteries	Dumpster/contract → DRMO
		Batteries, spent Ni/Cd	--	2-3 batteries	Dumpster/contract → DRMO
Corrosion Control Shop	370	Paints, primers	200 gal	Empty containers, brushes	Dumpster/contract
		Thinners, removers	250 gal	125 gal	Contract → DRMO
		Adhesives, epoxies	2 gal	Empty containers	Dumpster/contract
		Solvents (toluene, MIBK)	48 gal	48 gal	Contract → DRMO
		Aircraft barrier remover	1,800 gal	1,800 gal	Floor Drain
Fuel Shop (Fuel Systems Repair)	370	Paints	3 gal	Empty containers, brushes	Dumpster/contract
		Solvents (TCA, isopropyl alcohol)	5 gal	Empty containers, rags	Dumpster/contract
		Sealants	3 gal	Empty containers	Dumpster/contract
Repair and Reclamation (Wheel and Tire Shop)	370	Paints	Unknown quantity	Empty containers, brushes	Dumpster/contract
		Thinners, removers	Unknown quantity	Empty containers	Dumpster/contract
		Solvents (stoddard, MEK, toluene)	Unknown quantity	Empty containers, rags	Dumpster/contract
				Free liquids	Contract → DRMO
Periodic Maintenance		Paints (spray)	1,000 12-oz cans	Empty containers	Dumpster/contract
		Thinners, removers	24 gal	--	
		Adhesives, epoxies, sealants	700 tubes	Empty containers	Dumpster/contract
		Hydraulic fluids	600 gal	500-600 gal	Contract → DRMO
		POLs (lubricating oil)	800 gal	Unknown quantity	Contract → DRMO
		Solvents (MEK, stoddard)	Unknown quantity	Unknown quantity	Contract → DRMO
		Absorbent (Speedy Dry)	70 bags	70 bags	Dumpster/contract/DRMO
Hangar Areas Maintenance	370	Paints	60 gal	Empty containers, brushes	Dumpster/contract
		Paints (spray)	64 12-oz cans	Empty containers	Dumpster/contract
		Adhesives, epoxies, sealants	10 gal	Empty containers	Dumpster/contract
		POLs (excluding JP-4)	1,200 gal	1,000 gal	Contract → DRMO
		Hydraulic fluids	280 gal	280 gal	Contract → DRMO
		Solvents (stoddard solvent, MEK)	1,200 gal	1,200 gal	Contract → DRMO
		JP-4	1,500,000 gal	22,000 gal	FTA → Contract
		Isopropyl alcohol (anti-freeze)	600 gal	500-600 gal	Contract → DRMO
Civil Engineering Buildings & Grounds (Carpenter Shop, Heating Shop, Plumbing Shop, Power Production)	250	Paints (spray)	200 12-oz cans	Empty containers	Dumpster/contract
		Paints	200 gal	Empty containers, brushes	Dumpster/contract
		Adhesives, epoxies, sealants	1 gal	Empty containers	Dumpster/contract
		Paint thinners, strippers	80 gal	80 gal	Contract → DRMO
		POLs	10-20 gal	10 gal, rags	Contract → DRMO
		Hydraulic fluids	50-60 gal	50-60 gal	Contract → DRMO
		Herbicides	200 gal	Empty containers	Dumpster/contract
		Fertilizers	20-40 40-lb bags	Empty bags	Dumpster/contract
		Fuel Oil #2	144,000 gal	--	N.A.

Table AD-1 (Cont'd)

Shop Name	Building No.	Hazardous Materials/Wastes[a]	Estimated Maximum Annual Quantities Material Used	Estimated Maximum Annual Quantities Wastes Generated	Method of Treatment/Storage/Disposal 1971 — 1982 — 1987
Parachute Shop	354	Paints (spray)	36 8-oz cans	Empty containers	Dumpster/contract
		Solvent (tetrachloroethylene)	1 gal	Empty containers, rags	Dumpster/contract
Avionics (Aircraft Instruments)	370	Paints (spray)	200 1-oz cans	Empty containers	Dumpster/contract
		Adhesives, epoxies	36 oz	Empty containers	Dumpster/contract
		Solvents (cleaning compounds)	1 gal	Empty containers, rags	Dumpster/contract
		POLs (naptha, lubricant)	1 gal	Empty containers, rags	Dumpster/contract
Weapons Shop	378	Paints, spray	28 12-oz cans	Empty containers	Dumpster/contract
		Adhesives	24 1-oz tubes	Empty containers	Dumpster/contract
		POLs	4 gal	Empty containers, rags	Dumpster/contract
		Solvent (stoddard)	60 gal	60 gal	Contract — DRMO
Photography Shop	250	Hypo (fixer) solution	60-75 gal	60-75 gal	Cesspool — DRMO
		Developer	50-60 gal	50-60 gal	Cesspool
Base Communications, Navigation (Electronics)		Paints, lacquers	3 gal	Empty containers, brushes	Dumpster/contract
		Paints (spray)	10 12-oz cans	Empty containers	Dumpster/contract
		Adhesives	1 gal	Empty containers	Dumpster/contract
		POLs	1 gal	Empty containers, rags	Dumpster/contract
Fuels Management		Isopropyl alcohol	3 gal	Empty containers	Dumpster/contract
		Methanol	24 gal	Empty containers	Dumpster/contract
		Petroleum ether	6 gal	Empty containers	Dumpster/contract
NDI Lab	270	Developer	80 gal	80 gal	Holding Tank/ Recovery
		Fixer, emulsifier	75 gal	75 gal	Holding Tank/ Recovery
		Isopropyl alcohol	10 gal	10 gal	Contract — DRMO
		TCE	5 gal	5 gal	Contract — DRMO
		POLs	25 gal	25 gal; rags	Contract — DRMO
					Dumpster/contract
Service Station, Gas Pumps	392	Fuel (reg/unleaded/diesel)	38,000 gal	--	N.A.
Supply	250	Paints (spray)	60 12-oz cans	Empty containers	Dumpster/contract
		Solvent, (TCA)	1 gal	Empty containers, rags	Dumpster/contract
Entire SCANG	--	Refuse	--	Unknown	Dumpster/contract

[a]Abbreviations:
MEK - methyl ethyl ketone
POL - petroleum, oils, and lubricants
TCA - trichloroethane
Ni - Nickel: Cd - cadmium
MIBK - methy isobutyl ketone
TCE - trichloroethylene
DRMO - Defense Reutilization and Marketing Office
FTA - Fire Training Area
N.A. - Not applicable

as listed in Table AD-1 have been estimated by the individual shops. These quantities are known to represent overestimations of the actual quantities used by each area in order to permit expanded use in the future. The corresponding quantities of wastes generated have been estimated on the basis of information obtained during the personnel interviews conducted during the shop tours. Figure AD-2 shows the location of buildings in which the shops are located. Waste generation, handling, and disposal practices on a shop-by-shop basis are discussed in the following subsections.

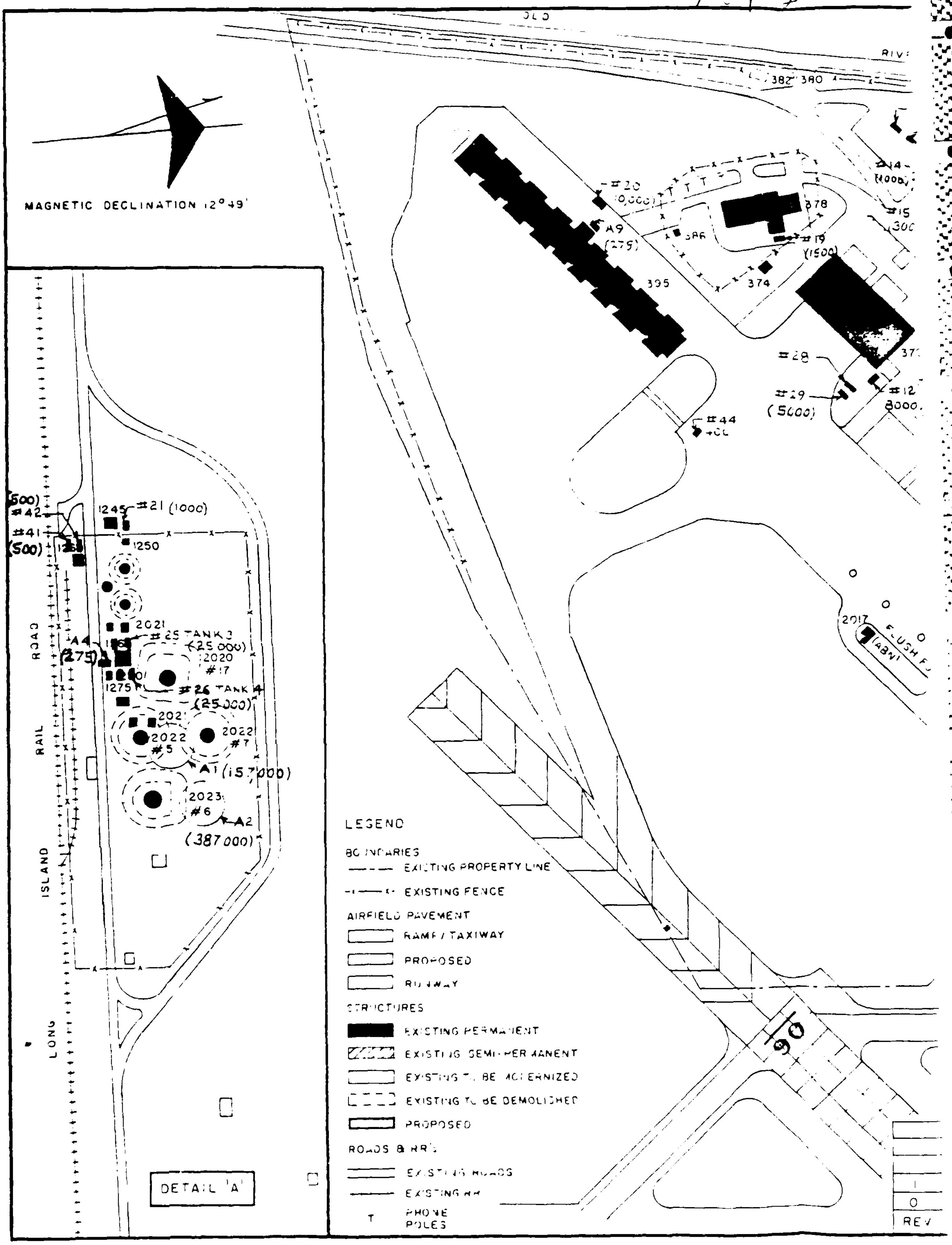
Vehicle Maintenance. The vehicle maintenance shop (motor pool) at SCANG generates wastes consisting of degreasing solvents, used engine oil, battery acid, thinners and paint removers, and empty cans of paint and/or primers. Currently, used engine oils and neutralized battery acids are collected in 55-gallon drums and disposed of through DRMO. A drum-top degreasing unit containing what is believed to be nonchlorinated solvent is serviced through a replacement/disposal agreement with a solvent marketing firm. Additional solvents and thinners are collected in 55-gallon drums and disposed of through DRMO. Empty paint cans, brushes, and other waste paint materials are disposed of in on-base dumpsters.

It was reported that although the floor drains in the vehicle maintenance shop are currently used only for the disposal of wash water, other waste liquids including solvent wastes were previously disposed of in the floor drains. Reportedly, the majority of solvent wastes disposed of through the floor drains resulted from cleaning the area floors. Only soap and detergent cleaners are now allowed in the floor drain system. The floor drains discharge to the building's cesspool, via an oil and mud trap.

In the 1970s, a 275-gallon aboveground tank was used to store waste oil in the shop prior to its disposal off-base. The current drum disposal operation was initiated in the late 1970s or early 1980s.

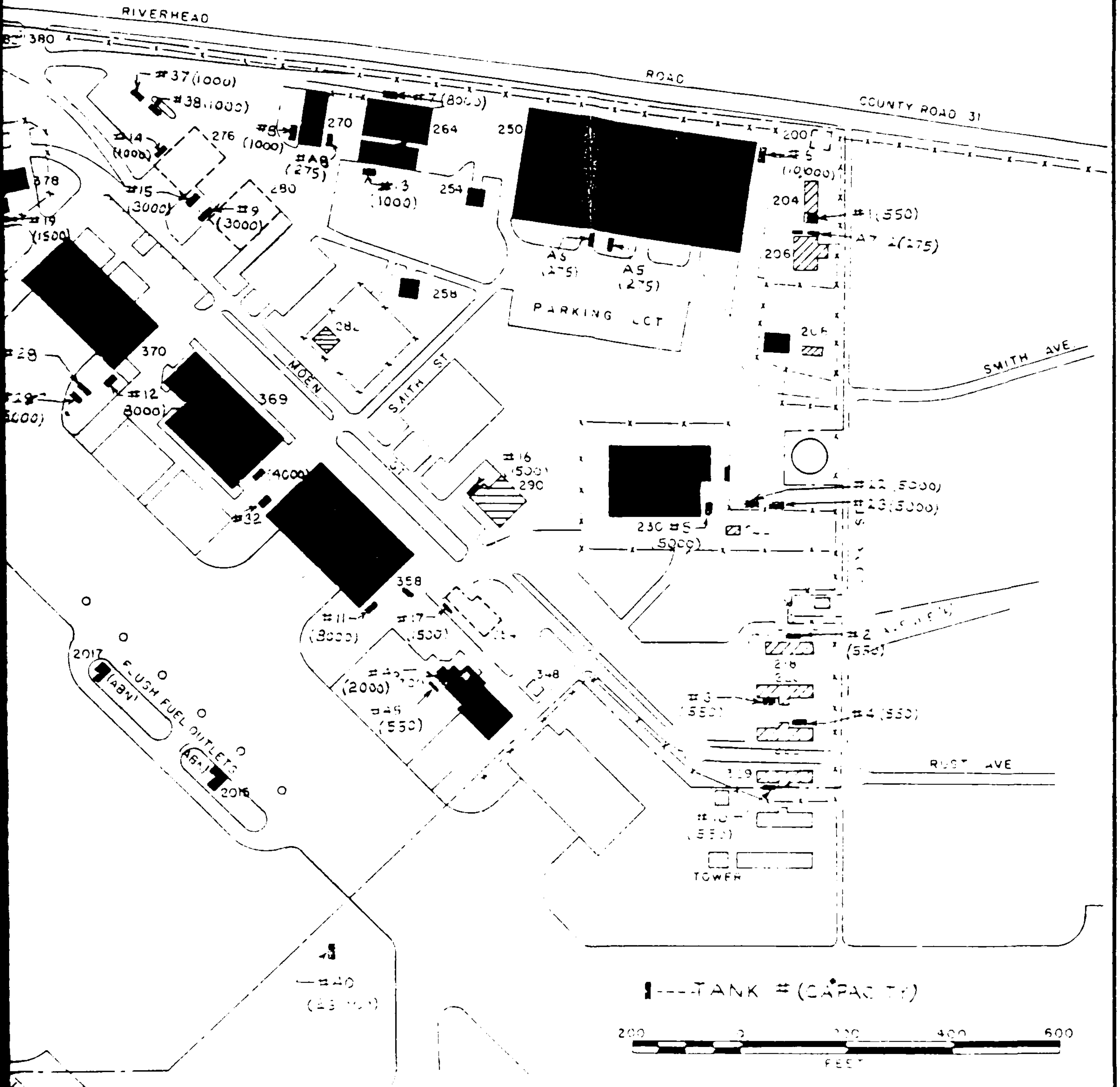
Empty paint cans; rags containing oil, solvents, and greases; spray cans; and associated vehicle maintenance wastes have reportedly been disposed of in dumpsters with other base refuse since SCANG operations began in 1971.

It was reported that there have been no major changes in the vehicle maintenance shop since SCANG started operations. The shop is still operated from



MAGNETIC DECLINATION 12°49'
OLD
RIVER
382
380
#20 (10,000)
A9 (279)
386
378
#19 (1500)
374
395
#14 (1000)
#15
#28
#29 (5000)
#12 (3000)
#44
2017
FLUSH
(ABN)
90
ROAD
RAIL
ISLAND
LONG
(500) #42
#41 (500)
1245
#21 (1000)
1250
2021
#25 TANK 3 (25 000)
2020 #17
A4 (275)
1275
#26 TANK 4 (25 000)
2022 #5
2022 #7
A1 (157000)
2023 #6
A2 (387 000)
DETAIL 'A'
LEGEND
BOUNDARIES
EXISTING PROPERTY LINE
EXISTING FENCE
AIRFIELD PAVEMENT
RAMP / TAXIWAY
PROPOSED
RUNWAY
STRUCTURES
EXISTING PERMANENT
EXISTING SEMI-PERMANENT
EXISTING TO BE MODERNIZED
EXISTING TO BE DEMOLISHED
PROPOSED
ROADS & RR'S
EXISTING ROADS
EXISTING RR
T PHONE POLES
0
REV

2-17



DEPARTMENTS OF THE ARMY AND THE AIR FORCE
NATIONAL GUARD BUREAU
WASHINGTON, D.C.

NEW YORK ANG
SUFFOLK COUNTY AIRPORT
WESTHAMPTON BEACH, NEW YORK
ANG DEVELOPMENT PLAN

FIGURE AD-2
SCANG LAYOUT MAP

Dames & Moore

REV	DATE	DESCRIPTION	INITIAL
1		UPDATED	
0	7/2/85	REDRAWN & UPDATED	

the same facility as in 1971 and the number of vehicles maintained has not increased significantly. In general, the work load and skill level have increased because of increased vehicle sophistication.

Aerospace Ground Support Equipment. The aerospace ground equipment support (AGE) provides power support for aircraft to allow all aircraft mechanical operations to function while aircraft are not in flight. AGE currently has approximately 60 pieces of operating equipment including generators and air compressors, and their operation was reported to be virtually maintenance free. A washrack containing an oil/water separator was installed at AGE in 1975. Since installation the oil collection system has been pumped out as needed by the Civil Engineering Department. The wastes generated by AGE have included paint and expoxy cans and containers, used oils and hydraulic fluids, solvents, paint thinners and battery acid. The primary wastes generated have been spent solvents and used motor oils. Both are collected and stored in 55-gallon drums for disposal through DRMO. Prior to the initiation of waste disposal through DRMO, waste oil from AGE was sold to a local laundry/dry cleaning operation for use as heating oil. This process was discontinued in the early 1980s. Hydraulic fluids are taken to the hanger area for storage and disposal through DRMO. Prior to disposal through DRMO, hydraulic fluids and other solvents were reportedly drummed and disposed of off base by private contract. Battery acids are neutralized and also handled by DRMO. Previously, battery acids were disposed of in the cesspool system. Empty paint cans, aerosol cans, and rags containing paints, oils, and solvents have always been placed in the base dumpsters for disposal off-base.

Aircraft Maintenance Shops. There are 11 individual shops at SCANG that have been characterized as aircraft maintenance shops for the purpose of this report. This was done due to the nature of the shops, their location, and the interaction between the 11 shops regarding chemical supply and waste handling. The eleven shops include the following:

- Environmental Shop;
- Structural Repair Shop;
- Machine Shop;
- Pneudraulics Shop;

- Engine Shop;
- Electrical Shop;
- Corrosion Control Shop;
- Fuel Shop;
- Repair and Reclamation Shop;
- Hanger Maintenance Area; and,
- Periodic Maintenance Shop.

Generally the wastes that these shops have produced since 1971 have included spent/recovered POLs and solvents, and empty paint and epoxy containers.

The environmental shop is involved in the heating, ventilation, and air conditioning of the aircraft. It has always produced only small quantities (less than 10 gallons/year) of POLs, solvent, and paint wastes, all of which have been disposed of on rags in the base dumpsters. Any free-liquid wastes have been disposed of with the bulk wastes generated by the other aircraft maintenance shops off-base either by private contract or through DRMO.

The structural repair shop is also referred to as the sheet metal shop. Shop wastes have been basically limited to scrap metal, which is salvaged and sent to DRMO, and empty containers from paints, resins, epoxies, and aerosol lubricants. Up to 2 gallons/month of various solvents may be used in the shop to clean metal parts. Any waste free liquids from this operation would probably have been disposed of off-base by private contract or through DRMO.

The wastes generated by the machine shop have consisted only of empty containers from paints, adhesives, and spray solvents. All of these wastes have always been disposed of with the general trash in the base dumpsters. As with the sheet metal shop, scrap metal from the machine shop is collected for salvage by DRMO.

The pneudraulics shop has generated waste solvents and hydraulic fluids that have been drummed and disposed of through DRMO. It was reported that the periodic maintenance shop orders and stocks the bulk PD-680 solvent used in this shop's degreasing tank. When this solvent requires replacement, the old material is

drummed and stored for disposal. Prior to the installation of the current cleaning tank, solvents from the pneudraulics shop reportedly were disposed of in the shop's drains. These drains are thought to discharge into a nearby cesspool.

Additional wastes generated by the pneudraulics shop have included used asbestos fire sleeves, which are currently bagged and sent to DRMO. Minor quantities of asbestos wastes, in the form of fire sleeves, were previously disposed of in dumpsters. Empty paint, epoxy, adhesive, sealant, and lubricant containers have always been disposed of in base dumpsters.

The engine shop is responsible for the overhaul and repair of aircraft engines at SCANG. Through engine overhaul activities waste oils and solvents have been generated. For approximately the past 6 years these oils and solvents have been collected by engine shop personnel in 55-gallon drums and disposed of through DRMO. Prior to that, waste POLs were taken to a central collection bowser (a portable storage tank) stored in one of the hangars, and later burned at the Fire Training Area.

With the exception of the liquid oils and solvents, all engine shop wastes have always been disposed of in dumpsters. These wastes have included empty paint cans, aerosol cans, and rags containing solvents and/or POLs.

The electrical shop at SCANG is involved in the maintenance and replacement of aircraft batteries including both nickel-cadmium and lead-acid batteries. The nickel-cadmium batteries consist of spent containerized units. Currently, these units are collected and sent to DRMO, although it was reported that in the 1970s the battery units were disposed of in base dumpsters.

Acid from the lead-acid batteries was previously disposed of in a base holding tank believed to be a cesspool. The battery casings were then deposited in base dumpsters. The battery acid is now neutralized and drummed for disposal through DRMO. The empty battery casings are turned in to DRMO for disposal. The battery shop replaces two to four batteries of each type per year. Other wastes produced by the electrical shop have been limited to empty containers from lubricants and lubricant compounds. These are disposed of in base dumpsters.

The primary responsibility of the corrosion control shop at SCANG that could produce hazardous waste is painting aircraft parts and equipment to prevent the

development of corrosion and extend the life of the equipment. Most of the painting done by corrosion control has always involved small paint jobs of usually less than 1 gallon; whole aircraft have not been painted at SCANG. Spray guns have been typically used to apply the paints which are primarily polyurethane-based. Lacquer and enamel paints were used in the past.

Wastes from the corrosion control shop have included empty containers of paints, primers, adhesives, and epoxies, all of which have been deposited in dumpsters for disposal; and liquid thinners, paint removers, and solvents which are collected and returned to DRMO for disposal. Previously these wastes were collected in 55-gallon drums and disposed of off-base by contract. Aircraft barrier remover, a biodegradable alkaline wash solution used by corrosion control, is disposed of in the site's drainage system.

The fuel systems repair shop at SCANG maintains the various fuel systems on the installation's aircraft. This operation has generated very little waste with only empty containers of paints and sealants requiring disposal. These have always been placed in dumpsters for disposal off-base. The small quantity of solvents used annually by the fuel shop (5 gallons) is lost to evaporation or disposed of on soiled rags with the general trash. No free liquids have been disposed of by the fuel shop.

The repair and reclamation shop is involved in the maintenance, repair and replacement of aircraft wheels and tires, and is known to use paints, thinners and solvents in completing this mission. The shop has a small solvent stripping tank used to remove paints from aircraft wheels. Since installation solvents from the tank have been recycled through a holding facility and changed as needed. Empty paint and thinner containers have always been disposed of in base dumpsters, and all free-liquid waste thinners and solvents have been drummed and disposed of off-base through contract or returned to DRMO for disposal. The quantities of each material used and the wastes generated by this shop were not included in the hazardous chemical data base, but base personnel have stated that the quantities have been small.

The hangar maintenance group is responsible for flight-line maintenance of all aircraft at the base. This maintenance mission includes the monitoring, addition, and replacement of all aircraft fluids and, therefore, results in the generation of large quantities of used engine oils, hydraulic fluids, and isopropyl alcohol (IPA)

(used as an antifreeze), and recovered JP-4 jet fuel from defueling operations. One thousand gallons of the military solvent PD-680 are stocked by aircraft maintenance in bulk storage tanks located near Hanger B.

All of the waste liquids including JP-4 are currently drummed and disposed of through DRMO. The recovered JP-4 was used for fire training operations until August 1986. Since that time the JP-4 has been drummed and shipped off-base for disposal through private contract or DRMO.

The hangar maintenance area has also generated empty waste paint, adhesive, epoxy, and sealant containers which have been disposed of in the base dumpsters with the general trash.

The periodic maintenance department is also responsible for aircraft maintenance at the SCANG, and like the hangar maintenance area, it has routinely used substantial quantities of lubricating oils, hydraulic fluids, and solvents. Waste free-liquids from these three groups have been disposed of off-base through contract or DRMO. Empty containers from paints, thinners, adhesives, epoxies, and sealants have always been disposed of in base dumpsters.

The periodic maintenance department also maintains a stock of "Speedy Dry," a magnesium clay compound used for adsorbing and containing spills of organic liquids. Following its use, the absorbent has either been collected in drums for disposal through DRMO or placed in a base dumpster. The proper method of disposal depends on the nature and quantity of the material spilled/adsorbed.

Civil Engineering Shops. The Civil Engineering Department at SCANG is responsible for the maintenance of the base's buildings, roads and grounds. The department's staff includes both guardsmen and state of New York employees, although the majority of the maintenance operations are carried out by the state employees. There are five civil engineering shops staffed by state employees. They include the following:

- Air conditioning;
- Carpentry;
- Electrical;

- Janitorial; and,
- Plumbing and heating.

At one time the state of New York had 20 full-time employees at SCANG. There are currently only 11.

Waste liquids generated by the civil engineering shops have included paint thinners and strippers, POLs, and hydraulic fluids. These liquids have been drummed and shipped off-base by contract or to DRMO for disposal. Empty containers from paints, epoxies, sealants, herbicides, and fertilizers are disposed of in base dumpsters.

Periodically, refuse that is either too large or too great in quantity for base dumpsters is collected by the Civil Engineering Department for disposal off-base. It was reported that this waste was taken to the Westhampton Town Landfill (closed in the early 1980s) or, more recently, to the Suffolk County Landfill.

In addition, the Civil Engineering Department is also responsible for outside contracting of building renovation/demolition activities conducted at SCANG. Between 1971 and 1982 the civil engineering department, with the permission of the SCA, allowed contractors to dispose of building materials and demolition wastes at Site 1, the Runway Disposal Area. This practice was discontinued in 1982 at SCA's request, and since that time contractors have been requested to remove all materials and demolition from the grounds of the SCA.

Miscellaneous Shops. There are eight additional shops or areas included in the site survey conducted for this report. They are generally non-mechanical maintenance shops and do not involve the generation of large quantities of waste. These shops include the following:

- Parachute Shop;
- Avionics Shop;
- Weapons Shop;
- Photographic Laboratory;
- Communications Shop;
- Fuels Management Shop;

- Nondestructive Inspection (NDI) laboratory; and,
- Fire Department.

The parachute shop has reportedly used only spray paints and a small quantity of solvent (1 gallon/year). Empty paint cans and spray cans containing residual solvents have always been disposed of in dumpsters.

Wastes from the avionics shops have included empty paint and epoxy containers which, along with used rags containing POLs or solvents, have been disposed of in dumpsters.

The weapons shop generates approximately 60 gallons of spent solvent annually which has been drummed and disposed of off-base through private contract or DRMO. Empty paint and adhesive containers have always been disposed of in dumpsters.

Wastes associated with the photographic laboratory have included photo developing and fixing solutions. Since 1978 the hypo-fixer solution has been collected and sent through DRMO for silver recovery. Prior to 1978 it was disposed of in one of the base's cesspools. The spent developer solution has always been disposed of in the cesspool system.

The base's communication and navigation shop has only generated empty containers of paints, adhesives, and lubricants. They have always been disposed of in dumpsters.

The fuels management shop at SCANG operates the fuel laboratory which uses isopropanol, methanol, and petroleum ether in small quantities. All three compounds are volatile solvents that have been used for parts cleaning, degreasing, and solvent rinsing of laboratory equipment. Small quantities of free-liquid wastes from the fuel maintenance shop are evaporated under a fume hood. If any large quantities of waste-liquids were generated, these wastes would have been drummed and disposed of off-base through private contract or DRMO. Small empty containers have always been disposed of in the base dumpsters.

The NDI lab uses photographic developers, fixers, and emulsifiers as well as penetrating dyes, carrier oils, and general solvents. The photographic wastes are collected in a 275-gallon holding tank and sent through DRMO for silver recovery.

This has been done since the NDI lab was started at SCANG. Used oils and solvents have been collected in 55-gallon drums and disposed of through private contract or DRMO. Oily and/or solvent-coated rags have been routinely disposed of in dumpsters.

The SCANG fire department is currently housed in a new firehouse located on the taxiway between hangars B and C (the SCA hangar). Previously the department was housed in the Northern half of the SCANG vehicle maintenance building. While entirely an ANG unit, the fire department responds to all fire emergencies at the SCA. The fire department's vehicles are serviced by the SCANG vehicle maintenance shop.

The fire department currently uses wrecked or abandoned automobiles for fire training exercises that are conducted in the vicinity of the fire training area (FTA) located in the central portion of SCA, off of the property currently leased by SCANG. Before August 1986, waste/recovered JP-4 was burned during fire training exercises in this area. It was reported that approximately 22,000 gallons of waste JP-4 were available annually for fire training, and that from 50 to 100% of this material was used during any given year. The SCANG fire training exercises have been conducted on a bermed concrete pad. The area includes a diked area with a cement base where the waste flammable material can be floated on a water surface to inhibit infiltration.

There is a 2,500-gallon aboveground POL storage tank located at the FTA which was used to store the waste JP-4 prior to its use. The tank which feeds the fire training pad through gravity flow is still located at the FTA, although it is not in use at this time.

POL Storage Tanks. A total of 45 POL storage tanks have been identified as either located on property leased by SCANG or located on SCA property and used by SCANG, including 41 tanks currently in use and 4 that have been abandoned in place. The total storage capacity of the active tanks has been estimated to be greater than 690,000 gallons. Ages of the tanks ranges from 1 to 27+ years. The date of installation of each of the 24 tanks installed prior to 1971 is unknown.

Of the 41 active tanks, 31 are underground tanks and 10 are aboveground tanks. The majority (29) of the tanks contain No. 2 fuel oil used for building

heating. The remaining tanks are used to store diesel fuel (6), waste oil (1), JP-4 (3), and gasoline (2). One of the active tanks is the previously discussed FTA JP-4 storage tank. The abandoned tanks include two waste oil tanks, a fuel oil tank, and a gasoline tank. It should be noted that based on discussion with SCANG personnel the above tank information updates the information provided in the Toxic Liquid Storage Registration submittal letter dated February 5, 1987.

Table AD-2 lists all of the SCANG POL storage tanks and their locations, contents, installation dates, and storage capacities. The tanks are listed by tank number as assigned by the Civil Engineering Department of the SCANG.

II.B.1 Site 1, Runway Disposal Area--Wastes and Disposal Methods

During the site visit/interviews at SCANG in June 1987 much of the information describing the history, operation, and use of the site that is included in the main section of this report (Section IV.A.2) was substantiated. The use of the site was initiated by SCAFB primarily for the disposal of concrete rubble and was used by SCA and SCANG (as tenants of SCA) primarily for disposition of construction debris until 1982. The following discussion summarizes the information collected during interviews with current/retired SCANG personnel in June 1987.

During the early to mid-1970s approximately 3 to 30 abandoned vehicles were located in the central area of the site as identified in Figure AD-3. (Reports on the number of vehicles at the site varied; estimates ranged from 3 to 5, 4 to 10, 6 to 8, 10 to 20, and 30.) The origin of these cars is unknown; they were reported to have been from personnel at SCAFB, SCA, and SCANG and from local owners. Reports indicated that the vehicles were privately owned automobiles. It was reported that some of the automobiles were already at the site when ANG became tenants at SCA; it was also reported that the number of automobiles fluctuated from 1970 to the mid-1970s. In the early to mid-1970s the automobiles were reported to have been removed from the site. Although the exact disposition of these cars was unknown, it was believed that the SCA authorized/initiated removal of the vehicles by a local scrap metal and/or junk yard dealer for the purposes of cleaning up the site and selling the scrap metal.

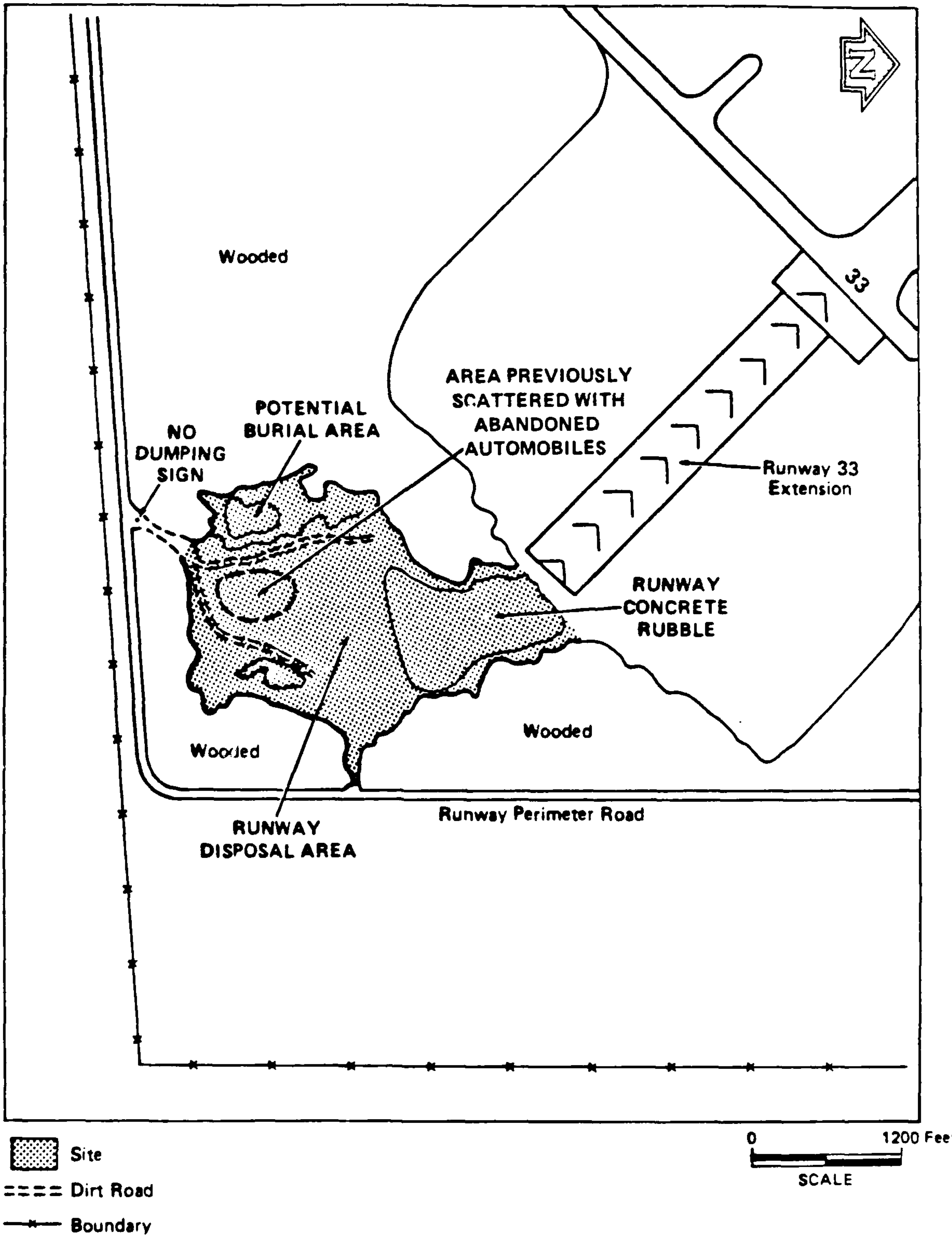
Table AD-2

Storage Tank Inventory at SCANG

Location	Structure	Contents	Above/Under Ground	Installation Date	Capacity (gal)	Comments
B204	1	No. 2 Fuel Oil	U.G.	Prior to 1971	550	
B218	2	No. 2 Fuel Oil	U.G.	Prior to 1971	550	
B220	3	No. 2 Fuel Oil	U.G.	Prior to 1971	550	
B222	4	No. 2 Fuel Oil	U.G.	Prior to 1971	550	
B230	5	No. 2 Fuel Oil	U.G.	Prior to 1971	5,000	
B250	6	No. 2 Fuel Oil	U.G.	Prior to 1971	10,000	
B264	7	No. 2 Fuel Oil	U.G.	Prior to 1971	8,000	
B270	8	No. 2 Fuel Oil	U.G.	Prior to 1971	1,000	
B280	9	No. 2 Fuel Oil	U.G.	Prior to 1971	3,000	
B329	10	No. 2 Fuel Oil	U.G.	Prior to 1971	550	
B358	11	No. 2 Fuel Oil	U.G.	Prior to 1971	8,000	
B370	12	No. 2 Fuel Oil	U.G.	Prior to 1971	8,000	
B264	13	No. 2 Fuel Oil	U.G.	1980	1,000	
B276	13	No. 2 Fuel Oil	U.G.	1980	1,000	
B276	15	No. 2 Fuel Oil	U.G.	1980	3,000	
B290	16	No. 2 Fuel Oil	U.G.	1980	1,500	
B354	17	No. 2 Fuel Oil	U.G.	1980	1,500	
B378	19	No. 2 Fuel Oil	U.G.	Prior to 1971	1,500	
B395	20	No. 2 Fuel Oil	U.G.	Prior to 1971	10,000	
B1245	21	No. 2 Fuel Oil	U.G.	1981	1,000	
B230	22	Gasoline	U.G.	Prior to 1971	5,000	
B230	23	Gasoline	U.G.	Prior to 1971	5,000	
Tank 3	25	No. 2 Fuel Oil	U.G.	Prior to 1971	25,000	
Tank 4	26	No. 2 Fuel Oil	U.G.	Prior to 1971	25,000	
B370	28	No. 2 Fuel Oil	U.G.	1980	1,500	
B370	29	Waste Oil	U.G.	1980	5,000	
B369	33	No. 2 Fuel Oil	U.G.	1985	4,000	
B276	37	Diesel Fuel	U.G.	1960	1,000	
B276	38	Diesel Fuel	U.G.	1960	1,000	

Table AD-2 (cont'd)

[illegible]	Structure	Contents	Above/Under Ground	Installation Date	Capacity (gal)	Comments
[illegible]	40	No. 2 Fuel Oil	U.G.	Prior to 1971	25,000	abandoned
[illegible]	41	Waste Oil	U.G.	1953	500	abandoned
[illegible]	42	Waste Oil	U.G.	1953	500	abandoned
[illegible]	44	Gasoline	U.G.	Prior to 1971	unknown	abandoned
[illegible]	45	Diesel Fuel	U.G.	1986	550	
[illegible]	46	No. 2 Fuel Oil	U.G.	1986	2,000	
Tank 5	A1	JP-4	A.G.	Prior to 1971	157,000	
Tank 6	A2	JP-4	A.G.	Prior to 1971	387,000	
B1280	A3	Diesel Fuel	A.G.	1976	275	
B1265	A4	Diesel Fuel	A.G.	1980	275	
B250	A5	Diesel Fuel	A.G.	1985	275	
B250	A6	No. 2 Fuel Oil	A.G.	1975	275	
B206	A7	No. 2 Fuel Oil	A.G.	1986	550	
B270	A8	No. 2 Fuel Oil	A.G.	Prior to 1971	275	
B395	A9	No. 2 Fuel Oil	A.G.	Prior to 1971	245	
FTA	A10	JP-4	A.G.	1979	2,500	



INSTALLATION ASSESSMENT
SUFFOLK COUNTY AIRPORT
Westhampton Beach, New York

FIGURE AD-3
SITE 1, RUNWAY DISPOSAL AREA

During the period that abandoned automobiles were at the site, tires were also stored/disposed of there by SCANG personnel. A small storage shed that was reportedly discarded by SCAFB was situated near the entrance to the site on the eastern side. Used vehicle tires from SCANG were temporarily stored in this shed and used/returned as inventory demanded.

It was also reported that a small permanent wooden shed was situated near the entrance on the western side. This shed was reportedly left by SCAFB. Its purpose and use was unknown. It was observed to be empty by SCANG personnel.

During SCAFB closeout operations, 2 to 4 flatbed loads of equipment from the newly constructed mess hall and other Air Force operations were reportedly buried using a backhoe. According to information provided during a single interview, these wastes were buried near the entrance to the Runway Disposal Area. Based on all other information currently available about the site, there is only limited potential for this to have occurred. It is more likely that this report is referring to burial operations similar to those that were known to have occurred at the Canine Kennel landfill during the same period. It was also reported by the same individual that trenching operations occurred at the Runway Disposal Area in the mid-1960s and the SCAFB used this area as a routine landfill site for base refuse. This report was provided by an individual who was not stationed at the base until 1970 and it therefore seems unlikely that the individual would be familiar with SCAFB activities that occurred in the mid-1960s. This information was also not substantiated nor was it confirmed by any other information collected during interviews with SCAFB, SCANG and SCA personnel, or from other documents including historical aerial photographs. It is also inconsistent with all other previous information. Several reports concurred that this occurrence was unlikely due to the observed surface condition of the Runway Disposal Area at the time of ANG personnel arrival in the early 1970s.

With permission from SCA, the Runway Disposal Area was used by SCANG from 1971 to 1982. It was reported that use of the site was not routine, but rather it was used on occasion for disposal of construction debris and associated bulk type innocuous wastes (i.e., scrap steel, bricks, etc.) that could not be disposed of in the base dumpsters along with the general trash.

Although it was reported by SCANG personnel that there were more wastes at the Runway Disposal Area when they initially occupied the base than the concrete rubble resulting from resurfacing of the SCAFB runways, the wastes reported to have been disposed of at the site prior to their arrival included building materials, used gutters, scrap wood, junk automobiles, and scrap steel.

Despite efforts to collect additional confirmatory information concerning previous reports that earth-moving activities may have occurred in the western portion of the disposal area in the mid-1970s (see Section IV.A.2 of the main report), no further information was obtained concerning this issue.

The following observations were made by project team personnel during the visual inspections of the site on June 3 and 4, 1987. Since August 1986, the main entrance on the southern boundary of the site has been blocked with several piles of excavated soils. These piles were placed there to prohibit vehicle entrance to the site from that point. Although most of waste quantities at the site have remained unchanged since August 1986, recently disposal of materials (1 week to 9 months prior to the visit) were observed. These materials included couches, a refrigerator, cardboard boxes, bags of domestic trash, and building debris (including wooden debris from remodeling of the SCANG parachute jumpers building). Most of the recent dumping appeared to be from the unauthorized disposal of innocuous building material and household trash. During the site inspection it was noted that approximately 20 empty and severely rusted 5-gallon drums of aliphatic thinner were located in the southeast corner of the site. SCA identification was noted on one of the drums. These drums were not noted by the team on the previous site inspection but available information indicates them to have been at the site for at least eight years. Two empty 5-gallon plastic drums labeled "fire fighting foam ... meets military specs" were also observed at the site and based on their condition were probably disposed of less than a year ago.

Four full 5-gallon cans of metal coating resins were observed at the site. Military spec numbers and supply numbers were noted painted on the cans. The cans appeared to have been unopened and intact and have since been removed from the site by SCANG personnel. During removal, a date of 1973 was noted to be on one of the cans. Other empty containers were noted to have markings "... meets military specs" but no identifiable supply numbers. This information was collected

only for the purpose of trying to identify waste types and potential sources. In three separate locations, unidentifiable chemical waste (possibly paints or resins) were noted to be either contained in, or spilled out of, the bung openings of rusted drums. In each instance the material was observed to be solid or semisolid. No chemical liquids were observed.

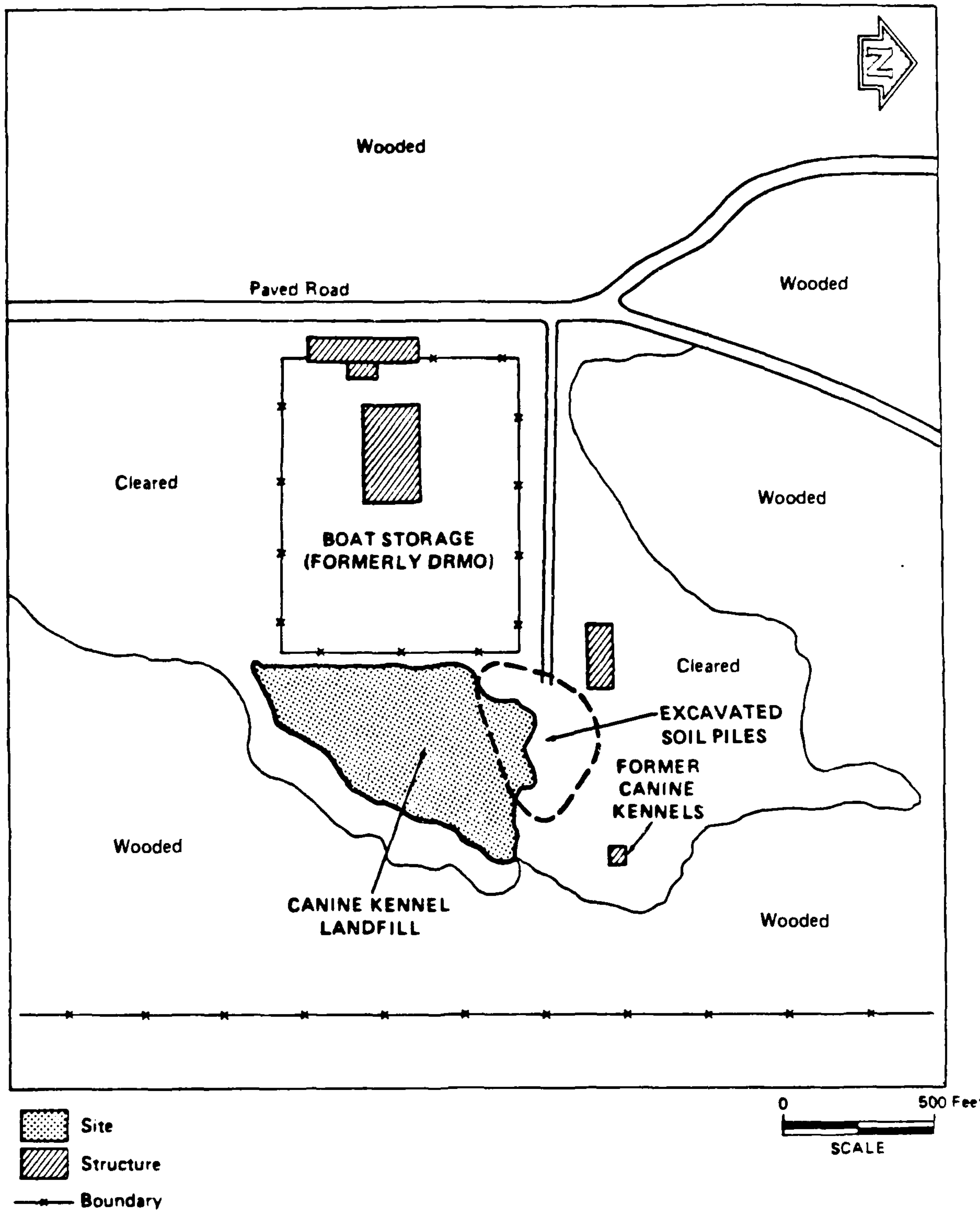
Although the above discussion and information provided in Section IV.A.2 of the main report indicate that primarily inert wastes were disposed of on the surface of the Runway Disposal Area, there remains a potential for contaminants to be or to have been associated with the discarded drums and containers. In addition, there is some potential for buried wastes within this disposal area. Therefore, as previously concluded in Section IV.A.2 of the main report, the potential for contaminant migration suggests that contamination assessment investigations at Site 1 may be warranted.

II.B.2 Site 2, Canine Kennel Landfill--Wastes and Disposal Methods

During the interviews with SCANG personnel in June 1987 no new additional information was collected concerning this site; the site is described in detail in Section IV.A.3 of the main section of this report. Since the operation and use of the site as a landfill occurred during closeout operations of SCAFB in the spring of 1970, disposal at this site was terminated prior to the arrival of ANG personnel in 1971. Therefore, as expected, SCANG personnel interviewed (except those individuals previously employed at SCAFB) were not familiar with the history of this site.

The following observations were made by project team personnel during the visual inspections of the site on June 3 and 4, 1987.

Since the August 1986 site visit, an estimated 20 to 30 tons of excavated sandy soils have been deposited in piles near the entrance and vicinity of the Canine Kennel Landfill as shown in Figure AD-4. The excavated soils were deposited by the base contractor responsible for construction of the new ANG fire department building. Reportedly, the contractor received permission from SCA to deposit these excavated soils at the site. The remainder of the site appeared to be undisturbed since the site visit in August 1986.



INSTALLATION ASSESSMENT SUFFOLK COUNTY AIRPORT Westhampton Beach, New York	FIGURE AD-4 SITE 2, CANINE KENNEL LANDFILL

II.C SITE EVALUATIONS AND HAZARD ASSESSMENT

The HARM rankings and site rating forms for the Runway Disposal Area (Site 1) and the Canine Kennel Landfill (Site 2) that were previously prepared during the initial study (and incorporated in the main section of this report) were reviewed subsequent to the June 1987 visit to SCANG. It was determined that none of the additional information collected (and included in this addendum report) impacted the previous HARM rankings. Therefore, the scores of 52 and 57 previously presented for Sites 1 and 2, respectively, are still appropriate on the basis of the addendum report findings.

III. CONCLUSIONS

The following conclusions are based on information obtained through interviews with SCANG personnel, a review of SCANG records, and field observations completed in June 1987.

- Previous conclusions and recommendations presented in the main section of this report are still considered valid, based on data collected during the addendum study.

- The major waste streams generated at SCANG include waste POLs, solvents, and general refuse; these wastes are disposed of off-base by contract or DRMO.

- SCANG contributed construction debris wastes to Site 1, Runway Disposal Area, from 1971 to 1982 with approval from Suffolk County Airport.

- No records search or interview information collected indicates that Site 1, Runway Disposal Area was used by SCANG for disposal of hazardous wastes. During site visits four apparently unopened 5-gallon cans of metal coating resins were observed at Site 1. The cans had military markings and carried a 1973 date. How they got to the site is unknown. They have subsequently been removed.

- Evidence indicates that unauthorized disposal of potentially hazardous materials has occurred at Site 1, Runway Disposal Area, since July 1970; the parties responsible for this disposal are unknown. Unauthorized disposal was noted to have occurred between the August 1986 and June 1987 site visits.

- Evidence indicates that Site 2, Canine Kennel Landfill, was not used by SCANG for waste disposal.

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See Bibliography of Main Section of this report for additional references.

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